AD2-EOC-96-055

ADEOS-II

MISSION OPERATIONS IMPLEMENTATION PLAN

(M O I P)

(NASDA / NASA / NOAA)

Version 4.0

October 1998

NATIONAL SPACE DEVELOPMENT AGENCY OF JAPAN

AD2-EOC-96-055
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ADEOS-II Mission Operations Implementation Plan

(NASDA/NASA/NOAA)

Version 4.0

APPROVED BY:

Seiichi Ueno
NASDA / EOPD, Senior Engineer
(ADEOS-II Project Manager)

Yoshio Ishido
NASDA / EOSD, Senior Engineer
(ADEOS-II Ground Segment Project Manager)

Kazuya Kaku
NASDA / EOC, Senior Engineer
(EOIS Project and
ADEOS-II Ground Segment Operation Manager)

NASA
ADEOS-II Program Manager

NASA/NGN
Telecommunications and
Mission Services Manager

NASA/GSFC/WFF
Ground Networks Project Manager

NASA / JPL
SeaWinds Project Manager

NASA / PO.DAAC
DAAC Manager

NASA / ESDIS
ESDIS Project Manager

NOAA / NESDIS Office of Satellite Data
Processing and Distribution Director

APPROVED BY:

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ADEOS-II Mission Operations Implementation Plan

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o Deletions are indicated by (e.g., ~~Project~~)
o Additions are indicated by bold (e.g., **Project**)
o Comments are indicated by italics (e.g., *Project*)

ADEOS-II Mission Operations Implementation Plan
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List of TBD Items

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Acronyms/Abbreviations

ADEOS-II	:	Advanced Earth Observing Satellite-II
AGSID	:	ADEOS-II to Ground Stations Interface Document
AMSR	:	Advanced Microwave Scanning Radiometer
ANSI	:	American National Standard Institute
AO	:	Announcement of Opportunity
AOD	:	ADEOS-II Operational Document
ASF	:	Alaska SAR Facility (University of Alaska)
CCITT	:	International Telegraph and Telephone Consultative Committee
CCT	:	Computer Compatible Tape
CCSDS	:	Consultative Committee for Space Data Systems
CDR	:	Critical Design Review
CEOS	:	Committee On Earth Observation Satellites
CEOS-IDN	:	Committee on Earth Observation Satellites-International Directory Network
CNES	:	Centre National d'Etudes Spatiales
COMETS	:	Communications and Broadcast Engineering Test Satellite
DCS	:	Data Collection System
DDS	:	Data Distribution Subsystem
DDMS	:	Data Distribution and Management System
DMS	:	Dynamics Monitoring System
DRTS	:	Data Relay and Tracking Satellite
DTL	:	Direct Transmission subsystem for Local Users
ECI	:	Earth Center Inertial coordinates
EOC	:	Earth Observation Center (NASDA)
EOIS	:	NASDA's Earth Observation data and Information System
EOM	:	End of Mission
EORC	:	Earth Observation Research Center
EOS	:	Earth Observing System
EOSD	:	Earth Observation System engineering Dept.
EOSDIS	:	EOS Data and Information System
ESDIS	:	Earth Science Data and Information System
FAX	:	Facsimile Message
FRR	:	Flight Readiness Review
FTP	:	File Transfer Protocol
GDR	:	Ground segment Design Report Meeting
GLI	:	Global Imager
GLRR	:	Ground segment Launch Readiness Report Meeting
GPS	:	Global Positioning Satellite
GSFC	:	Goddard Space Flight Center (NASA)
HDDR	:	High Density Digital Recorder
HDDT	:	High Density Digital Tape
HK	:	Housekeeping
IEOS	:	International Earth Observing System
IF	:	Intermediate Frequency
IIP	:	Instrument Implementation Plan
ILAS-II	:	Improved Limb Atmospheric Spectrometer-II
IOCS	:	Inter-Orbit Communication Subsystem
IP	:	Implementation Plan
IPCN	:	Implementation Plan Change Notice
IPCP	:	Implementation Plan Change Proposal
IRD	:	Interface Requirements Document
JPL	:	Jet Propulsion Laboratory (California Institute of Technology)
JPRD	:	Joint Program Requirement Document
MDR	:	Mission Data Recorder
MMO	:	Mission operation Management Organization
MMOFE	:	Mission operation Management Organization Front-End (Directory)
MOA	:	Memorandum of Agreement

MOIP	:	Mission Operations Implementation Plan
MOIS	:	Mission Operations Interface Specification
MOM	:	Mission Operations Meeting
MOU	:	Memorandum of Understanding
MRT	:	Mission Real Time
N/A	:	Not Applicable
NASA	:	National Aeronautics and Space Administration
NASDA	:	National Space Development Agency of Japan
NESDIS	:	National Environmental Satellite Data and Information Service
NGN	:	NASA/NOAA Ground Network
NOAA	:	National Oceanic and Atmospheric Administration
NRT	:	Near Real Time Data (Directory)
NSCAT	:	NASA Scatterometer
OCL	:	Operations Coordination Letter
OCTS	:	Ocean Color and Temperature Scanner
ODR	:	Optical Data Recorder
Opr.	:	Operational
ORR	:	Operational Readiness Review
OS	:	Operating System
OSDPD	:	NOAA/NESDIS Office of Satellite Data Processing and Distribution
OSR	:	Operation Status Report Meeting
PCD	:	Payload Correction Data
PCM	:	Pulse Coded Modulation
PDR	:	Preliminary Design Review
PFM	:	Proto-Flight Model
PO.DAAC	:	Physical Oceanography Distributed Active Archive Center
POLDER	:	Polarization and Directionality of the Earth's Reflectances
QQC	:	Quality, Quantity and Continuity
RF	:	Radio Frequency
RGS	:	Receiving Ground Station
RORR	:	Routine Operation Readiness Report meeting
SC	:	Spacecraft
SeaPAC	:	SeaWinds Processing and Analysis Center
SeaWinds	:	NASA-JPL Scatterometer On ADEOS-II
SITE	:	System Integration and Test Building
SOOH	:	Spacecraft Orbital Operations Handbook
TACC	:	Tracking And Control Center (NASDA)
TACS	:	Tracking And Control Station (NASDA)
TBD	:	To Be Determined
TCP/IP	:	Transmission Control Protocol/Internet Protocol
TEDA	:	Technical Data Acquisition Equipment
TKSC	:	Tsukuba Space Center (NASDA)
TL	:	Time of Launch
TOMS	:	Total Ozone Mapping Spectrometer
TRR	:	Technical Readiness Review
UHF	:	Ultra High Frequency
USB	:	Unified S-Band
UTC	:	Universal Time Coordinated
VMS	:	Visual Monitoring System
WFF	:	Wallops Flight Facility

1. General

1.1 Scope

This ADEOS-II Mission Operations Implementation Plan (MOIP) defines the responsibilities among NASDA, NASA and NOAA for interface coordination, deliverables, support requirements, documents, and schedules necessary for the accomplishment of mission operations including: 1) SC tracking; 2) SC control; 3) instrument monitoring and control; 4) mission data acquisition, processing and archiving; and 5) mission operation planning based on the "Memorandum of Understanding" (MOU) between NASDA, NASA and NOAA.

The MOIP covers interface coordination for the pre-launch mission simulation test, the initial on-orbit check-out and the routine operations. The initial on-orbit check-out will be managed by the NASDA/ADEOS-II Project and is specified in the ADEOS-II/SeaWinds Instrument Implementation Plan (IIP) prepared by the NASDA/ADEOS-II Project, however only the issues related to the ground segments interfaces are described in this MOIP.

1.2 Languages and Units

All interface documents, meetings and meeting materials shall be conducted in the English language. This includes all interface specifications, minutes of meetings, submitted documents and letters.

All numerical interface data shall be presented in metric units in System International (SI).

1.3 Glossary

Important terms used in this document for specifying items and activities are defined in Appendix A, Glossary.

1.4 Definition

1.4.1 Project Definition

The Advanced Earth Observing Satellite-II (ADEOS-II) Project is a part of NASDA's Earth Observation Program. The Program's major objectives are to acquire data which will be used in research in many areas of Earth system science. The ADEOS-II Project is defined by the ADEOS-II/H-II Program Plan, a part of the Earth Observation System Program Plan. The ADEOS-II Project will be carried out by the NASDA/ADEOS-II Project, NASDA/EOSD, NASDA/TACC and NASDA/EOC. The NASDA/ADEOS-II Project will manage the ADEOS-II spacecraft development and prepare the ADEOS-II Satellite Operation Documents. NASDA/EOSD, NASDA/TACC and NASDA/EOC will manage the ADEOS-II mission operations and operate the ADEOS-II ground segment.

The Earth Observation data and Information System (EOIS) Project is a part of NASDA's Earth Observation Program. The Program's objectives are to provide earth science experts around the world with highly processed, scientifically verified data~~,~~ and related information~~. and necessary tools to analyze the data observed from space.~~ The EOIS Project is carried out by NASDA/EOC.

The NASA SeaWinds Scatterometer (SeaWinds) Project at the Jet Propulsion Laboratory is part of NASA's Earth Observation Program. The SeaWinds instrument is a specialized microwave radar and will be used to continue the observational record of the NASA Scatterometer (NSCAT) instrument flown on ADEOS for the frequent and accurate measurement of vector winds over the global ocean. The SeaWinds Project will operate the instrument. SeaWinds Project will operate the SeaWinds

Processing and Analysis Center (SeaPAC) and receive the SeaWinds Level 0 data and will process the Level 0 data to the higher level products.

The NASA's Earth Observing System (EOS) Data and Information System (EOSDIS) Project is a part of NASA's Earth Science Enterprise, and is managed at Goddard Space Flight Center (GSFC). The EOSDIS Project supports NASA's Earth Observation Program with communication, processing, archive and distribution services. The Physical Oceanography Distributed Active Archive Center (PO.DAAC) at the Jet Propulsion Laboratory (JPL) is one of the data centers of EOSDIS. The PO.DAAC will utilize the EOSDIS services for generating catalogue (inventory, directory) information, for archiving SeaWinds data sets and for distributing higher level products and catalogue information.

The NASA/NOAA Ground Network (NGN) Project carries out the NASA management activity for the coordination of data acquisition from passes not available to EOC at Hatoyama, Japan or Kiruna, Sweden. The NGN Data Acquisition Stations are located at Fairbanks, Alaska (Alaska SAR Facility: ASF) and at Wallops Island, Virginia (Wallops Flight Facility: WFF).

The NOAA/NESDIS Office of Satellite Data Processing and Distribution (OSDPD) will utilize global SeaWinds data obtained in near real-time for operational purposes. Selected data from the ADEOS-II GLI instrument - 1Km will also be used for the US Coast Watch Program. Measurements from remote data collection platforms of the Data Collection System (DCS) of ADEOS-II will be relayed from both EOC and NESDIS to CNES in Toulouse, France. These data platform measurements will be processed into environmental measurements at CNES and distributed to users worldwide.

1.4.2 Mission Data Definition

Mission Data Recorder (MDR) data, Mission Real Time (MRT) data, Optical Data Recorder (ODR) data and GLI 250m data will be acquired using the Inter Orbit Communication System (IOCS) and X-band direct downlink.
The detailed definition of each data is described in the Appendix A, Glossary.

1.4.3 Data Capture Mode Definition

There are two modes, modes 1 and 2, depending on the types of data capture for the routine operation phase.

(1) Data Capture Mode 1

During this operation mode, the IOCS will be used for MDR (global) data, ODR data, real time GLI 250m data and MRT data acquisition. These data are acquired at EOC, Hatoyama.
The X-band direct downlink is also done to acquire MRT data (X3) and real time GLI 250m data (X1) within visible area of each ground station.

(2) Data Capture Mode 2

During this operation mode, the X-band direct downlink is used for acquisition of MDR (global) data, ODR data, GLI 250m data (X1) and MRT data (X3) at each ground station.

1.5 MOIP Change Procedure

MOIP changes shall be controlled by the ADEOS-II Project. Therefore, all change proposals shall be submitted to the ADEOS-II Project by the preparing organization. Changes will require agreement among NASDA, NASA and NOAA. Changes will be discussed at a Mission Operations Meeting (MOM; see section 2.4) or by exchanging Operations Coordination Letters (OCLs; see section 2.5). Changes shall be in agreement with the MOU and instituted by MOIP Change Notices.

The change procedure is as follows;

(1) Submission of MOIP Change Proposal

An agency requiring an MOIP Change will prepare an MOIP Change Proposal (IPCP; see Appendix B) and submit it to the ADEOS-II Project. The IPCP will be immediately sent from the ADEOS-II Project to NASA and NOAA by OCL using facsimile or mail.

(2) Discussion of MOIP Change Proposal

The ADEOS-II Project will decide the measures for an IPCP by agreement among NASDA, NASA and NOAA. NASDA, NASA and NOAA will discuss the proposal and derive a consensus for accepting or rejecting the change.

(3) Discussion of Programmatic MOIP Change Proposals

If a proposal is assigned as a programmatic change at the above discussion, the proposal will be discussed at a program meeting between NASDA, NASA and NOAA.

Programmatic change means a change which may have a critical impact on the schedule or an instrument mission achievement, or which may lead to unexpected and additional budget impacts.

(4) Notice of Result

(4-1) In Case of Approval

NASDA will provide a~~n~~ summary of the disposition in the IPCP. The signing by affected projects of the IPCP will close the discussion of the IPCP.

Approved changes will result in the NASDA preparation and distribution to all MOIP signatories of MOIP Change Notices (IPCN; see Appendix C), that describe the MOIP change and instructions on how the changes should be incorporated into the affected documents. Until the document is revised, the distributed IPCN(s) will be part(s) of the document.

(4-2) In Case of Rejection

NASDA will provide an explanation of why the IPCP was rejected. The signing by the ADEOS-II Project of the IPCP will close the discussion of the IPCP.

(5) Revision of MOIP

The ADEOS-II Project will revise the MOIP based on the IPCN(s).

2. Interface Coordination

2.1 Interface Control Documents

The technical and programmatic agreements concerning mission operations among the ADEOS-II Project, the SeaWinds Project, the EOSDIS Project, the NGN Project and NOAA shall be based on the following documents:

(1) Memorandum of Understanding between NASDA, NASA and NOAA for Cooperation in ADEOS-II Program (hereinafter referred as "MOU").

(2) NASDA/NASA/NOAA Joint Program Requirement Document (JPRD), if necessary.

(3) ADEOS-II Mission Operations Implementation Plan, AD2-EOC-96-055, (MOIP: this document).

(4) ADEOS-II Mission Operations Interface Specification (MOIS) common part, AD2-EOC-96-054, and individual part for NASA/NOAA, AD2-EOC-97-046, gives the requirements for mission operations and ground data interfaces.

(5) ADEOS-II to Ground Stations Interface Document (AGSID) gives the interface conditions of the ADEOS-II Spacecraft to ground stations including NASA ground stations.

(6) Spacecraft Orbital Operations Handbook (SOOH) SeaWinds, AMSR, DCS and GLI portion, prepared by the NASDA/ADEOS-II Project.
These documents contain descriptions of the functions, characteristics and operations of the SeaWinds, AMSR, DCS and GLI instruments.

In case of a conflict between the MOU and this MOIP, the MOU will govern. In case of a conflict between this MOIP and lower level documents referenced herein (such as the ADEOS-II MOIS), this MOIP will govern.

The MOIP will be issued and maintained by the NASDA/EOSD, with inputs and concurrence from the SeaWinds Project, the EOSDIS Project, the NGN Project and NOAA, and with required approval at the program level from NASDA, NASA and NOAA. The MOIS will be issued and maintained by the ADEOS-II Project with inputs and concurrence from the SeaWinds Project, the EOSDIS Project, the NGN Project and NOAA.

2.2 Reference Documents

The following documents are the reference documents for the MOIP:

(1) Mission Operation Requirements for ADEOS-II Ground Segment (ORD), AD2-EOC-95-004,
~~that~~ gives the summary of the general operating requirements and fundamental configuration of the ADEOS-II ground segment. This document is a~~n~~ NASDA internal document.

(2) ADEOS-II Ground System Interface Requirements Document (System IRD) (NASDA/NASA/NOAA), AD2-EOC-96-056,
~~that~~ gives requirements on the mission operation interfaces and the mission data interfaces between NASDA, NASA and NOAA ground segments for ADEOS-II mission operations.

These documents will be used to understand the outline of the requirements for the ground segment to be developed by each agency only during the initial coordination phase between NASDA, NASA and NOAA. After that, the contents of the documents will be mainly transferred to the MOIP and the MOIS, and other supporting documents.

The documentation tree for ADEOS-II among NASDA, NASA and NOAA is illustrated in Figure 1.

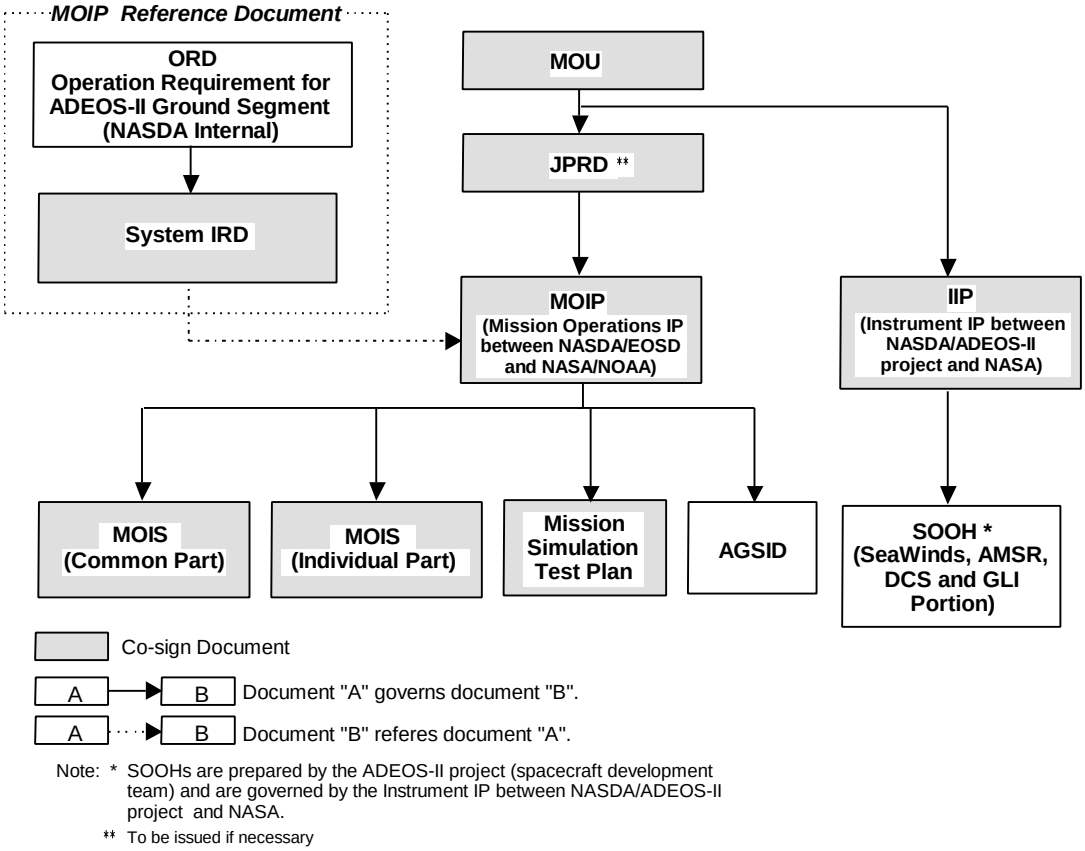

Figure 1 NASDA/NASA/NOAA Documentation Tree For ADEOS-II

2.3 Exchange of Technical Information and Data

NASDA, NASA and NOAA shall exchange all technical information and data considered to be necessary to fulfill the respective responsibilities. The exchange can be made via materials for the Mission Operations Meeting (MOM), input packages for reviews, the Operations Coordination Letter (OCL), etc.

2.4 Mission Operations Meeting

All formal communications regarding the technical interfaces among the ADEOS-II Project, the SeaWinds Project, the EOSDIS Project, the NGN Project and NOAA will use the Operations Coordination Letter (OCL) and will be discussed in the Mission Operations Meeting (MOM).

Staff persons designated by the Project Managers of NASDA, NASA and NOAA will be members of a MOM, as will be the NASDA, NASA and NOAA designated contractors. The MOM chairperson shall be from NASDA. The ADEOS-II Project, the SeaWinds Project, the EOSDIS Project, the NGN Project and NOAA are authorized to request a MOM when technical coordination is required. The authority to convene a MOM shall reside with the MOM chairperson. The date, place, duration and agenda of a MOM shall be determined by mutual consultation before the meeting.

2.5 Operations Coordination Letter

The Operations Coordination Letter (OCL) shall be used as the primary means of communication. The OCL will be utilized for the formal exchange of information that is necessary for the operations coordination among the ADEOS-II Project, the SeaWinds Project, the EOSDIS Project, the NGN Project and NOAA. The OCL shall be sent by facsimile or mail. The receiving side shall confirm the receipt of the OCL by return facsimile or mail. E-mail may also be used as the complementary means for OCL exchange.

2.6 Contact Points

See the “ADEOS-II Contact Points Document, AD2-EOC-96-124”.

2.7 Master Schedule

The major milestones of the interfaces among the ADEOS-II Project, the SeaWinds Project, the EOSDIS Project, the NGN Project and NOAA are as follows:

ADEOS-II Mission Operations Master Schedule

ADEOS-II Ground Segment Design Report meeting (GDR)	March 1998~~*~~
Pre-launch Mission Simulation Test	L-11 M~~1Y~~ to L-3M ~~(TBD)~~
Operation Training	L-3M to L
ADEOS-II Launch	November 2000 (L) ~~(TBD)~~
Initial On-orbit Check-out	L to L+3M
ADEOS-II Routine Operation Readiness Report meeting (RORR)	L+3M*
Routine Operation Phase	L+3M to the end of the mission

* As soon as possible after completion of Initial On-orbit Check-out.

2.8 Resolution of Problems

If a problem arises among the ADEOS-II Project, and the SeaWinds Project, the EOSDIS Project, the NGN Project or NOAA, the problem shall be resolved by mutual effort and agreement.

Problems that cannot be resolved at the MOM shall be resolved at the program level.

2.9 Accommodation of Personnel and Hardware

NASDA, NASA and NOAA shall mutually accommodate personnel and/or hardware that will be sent for MOMs, reviews, test, operation support, etc. In addition, the requirements for operating equipment space, storage space, personnel work space, resources and any other agreed to support in conjunction with test and operation support shall be accommodated.

3. Responsibilities

3.1 Basic Responsibilities

The division of responsibilities among NASDA, NASA and NOAA described in this plan shall be consistent with the MOU.

3.2 Operation Phases

The following four phases are defined for the ADEOS-II Program:

(1) Pre-launch Phase

Before launch phase.

(2) Launch Phase

From the end of pre-launch phase to the spacecraft separation.

(3) Early Orbit Operation Phase

After launch up to completion of on-orbit checkout.

(4) Routine Operation Phase

From the end of early orbit operation phase to the end of the mission.

3.3 Pre-launch Phase

All Projects will perform the Mission Simulation Test to confirm the compatibility of the mission data interfaces and the mission operation information file interfaces in accordance with the "Mission Simulation Test Plan".

The Mission Simulation Test will be performed in several phases.

The Mission Simulation Test Part I will be performed before ~~that~~ the network connection is available between NASDA/EOC, and SeaPAC, ASF, WFF, PO.DAAC and NOAA. In this phase, the sample data and files will be exchanged by Internet or physical media ~~or Internet (TBD)~~ to confirm the data processing and mission operation file generating function of each ground segment.

The network connection between NASDA/EOC, and SeaPAC, ASF, WFF, PO.DAAC and NOAA will be confirmed at the start of the Mission Simulation Test Part II. After that the data and file exchanging function and procedure using the network will be confirmed.

System operability and performance will be confirmed in almost the same environment as real operations (Mission Simulation Test Part III and IV).

The Mission Simulation Test including Part I through Part IV will be conducted by NASDA/EOSD.

After completion of the Mission Simulation Test and before the launch of ADEOS-II, the Operation Training will be performed with the ~~jointly~~ cooperation of the affiliated agencies.

3.3.1 SeaWinds Project

3.3.1.1 Mission Simulation Test Part I

(1) Data Pattern Test

The ADEOS-II Project will generate SeaWinds Level 0 and HK source packet test data and DMS processed test data from PFM test data and will deliver the data to SeaPAC using physical media.

The SeaWinds Project will confirm the formats and readability of the test data.

(2) Off line File Transfer Test

The ADEOS-II Project and the SeaWinds Project will generate samples of mission operation information files and will exchange the files between NASDA/EOC and SeaPAC using Internet or physical media. ~~or Internet (TBD).~~

The ADEOS-II Project and the SeaWinds Project will confirm the file formats and readability.

3.3.1.2 Mission Simulation Test Part II

(1) Network Connection Test

The computer network connection to exchange SeaWinds Level 0 data, HK source packets and mission operation information files between NASDA/EOC and SeaPAC will be confirmed.

(2) Data Transfer Test

The ADEOS-II Project will deliver the SeaWinds Level 0 and HK source packet test data and DMS processed test data from NASDA/EOC to SeaPAC using the network.

The SeaWinds Project will confirm the function of receiving test data via the network and also will confirm the readability of the data.

(3) Standard Product Test

The SeaWinds Project will generate SeaWinds test standard products (level 1B, 2A and 2B) for the SeaWinds standard product test to be performed between the ADEOS-II Project and the EOSDIS Project. The test data will be delivered to NASDA/EOC through PO.DAAC. (See 3.3.2.2 (3))

(4) On line File Transfer Test

The ADEOS-II Project and the SeaWinds Project will exchange samples of mission operation information files between NASDA/EOC and SeaPAC using the network.

Both Projects will confirm the function of delivering the sample files via the network and also will confirm the readability of the files.

3.3.1.3 Mission Simulation Test Part III

(1) Operation Test

The ADEOS-II Project and the SeaWinds Project will confirm the operability of both ground segments according to the operation time line by using samples of mission operation information files and mission data.

3.3.1.4 Mission Simulation Test Part IV

(1) End-to-End Test ~~(TBD)~~

(1-1) Command Test

The ADEOS-II Project, with NASA support, will confirm the function of receiving command requests from SeaPAC and processing commands for delivery by NASDA/TACC to the spacecraft including successful receipt by the SeaWinds instrument. ~~(TBD)~~

(1-2) Mission Data Test

~~TBD~~
The ADEOS-II Project will acquire raw data from the ADEOS-II spacecraft during the End-to-End command test and will process it to SeaWinds level 0 and HK source packet test data.

The ADEOS-II Project will deliver the level 0 and HK source packet test data from NASDA/EOC to SeaPAC using the network.

The SeaWinds Project will confirm the successful performance of the ADEOS-II spacecraft including the SeaWinds instrument using the level 0 and HK source packet test data.

3.3.1.5 Result Report

The ADEOS-II Project and the SeaWinds Project will mutually report the results of the above tests within one month of completion of all test items. Both projects should promptly report the results to each other after completion of each test item.

3.3.2 EOSDIS Project

3.3.2.1 Mission Simulation Test Part I

(1) Data Pattern Test

The ADEOS-II Project will generate an AMSR Level 1B test product and will deliver it to PO.DAAC using physical media.

The EOSDIS Project will confirm format and readability of the test data.

(2) Off line File Transfer Test

The EOSDIS Project will generate samples of SeaWinds standard product inventory information and deliver it to NASDA/EOC using Internet or physical media. ~~or Internet (TBD).~~

The ADEOS-II Project will confirm format and readability of the test data.

3.3.2.2 Mission Simulation Test Part II

(1) Network Connection Test

The computer network connection to exchange AMSR Level 1B product and inventory information of SeaWinds standard products between NASDA/EOC and PO.DAAC will be confirmed.

(2) Data Transfer Test

The ADEOS-II Project will deliver the AMSR Level 1B test product from NASDA/EOC to PO.DAAC using the network.

The EOSDIS Project will confirm the function of receiving the test product via the network and also will confirm the readability of the test product.

(3) Standard Product Test

The EOSDIS Project will make the inventory information corresponding to the SeaWinds Level 1B, 2A and 2B test products generated by the SeaWinds Project.

The EOSDIS Project will deliver the test products to NASDA/EOC using physical media, and will also deliver their corresponding inventory information from PO.DAAC to NASDA/EOC using the network.

The ADEOS-II Project will confirm the formats and readability of the test products, and the consistency between the products and the inventory information. Both projects will confirm the procedure for delivering the products.

(4) On line File Transfer Test

The EOSDIS Project will deliver a sample of the SeaWinds standard product inventory information file from PO.DAAC to NASDA/EOC using the network.

The ADEOS-II Project will confirm the function of receiving the sample file via the network and also will confirm the readability of the product.

This test can be included in the Standard Product Test.

(5) Catalogue Interoperability Test ~~(TBD)~~

The ADEOS-II Project (the EOIS Project) and the EOSDIS Project will confirm the interoperability between the catalogue systems of the ADEOS-II Project and the EOSDIS Project.

3.3.2.3 Mission Simulation Test Part III

(1) Operation Test

The ADEOS-II Project and the EOSDIS Project will confirm the operability of both ground segments according to the operation time line by using samples of mission operation information files and mission data.

3.3.2.4 Result Report

The ADEOS-II Project and the EOSDIS Project will mutually report the results of the above tests within one month of completion of all test items. Both projects should promptly report the results to each other after completion of each test item.

3.3.3 NGN Project

3.3.3.1 Mission Simulation Test Part I

(1) Data Pattern Test

The NGN Project will generate test raw data recording PN code, and will record it on physical media using a format as mutually agreed, and will deliver the media to NASDA/EOC.

The ADEOS-II Project will confirm the format and readability of the test data.

The ADEOS-II Project will provide ASF and WFF with test raw data which includes PFM test data acquired during PFM Data Acquisition Test at TKSC.

The NGN Project will generate AMSR, GLI 1km, SeaWinds, ILAS-II, DCS, VMS and DMS~~ADEOS-II~~ Level 0 test data and HK source packet test data from the PFM test data and will deliver the data to NASDA/EOC using physical media.

The ADEOS-II Project will confirm the formats and readability of the data.

(2) Off line File Transfer Test

The ADEOS-II Project and the NGN Project will generate samples of mission operation information files and will exchange the files between NASDA/EOC and ASF/WFF using Internet or physical media~~. or Internet (TBD).~~

The ADEOS-II Project and the NGN Project will confirm the formats and readability of the files.

3.3.3.2 Mission Simulation Test Part II

(1) Network Connection Test

The computer network connection to exchange ~~ADEOS-II~~ Level 0 data, HK source packets and mission operation information files between NASDA/EOC and ASF/WFF will be confirmed.

(2) Data Transfer Test

The NGN Project will deliver the AMSR, ILAS-II, DCS, VMS and DMS~~ADEOS-II~~ Level 0 test data and HK source packet test data from ASF/WFF to NASDA/EOC using the network.

The ADEOS-II Project will confirm the function of receiving the ~~ADEOS-II~~ Level 0 and HK source packet test data via the network and also will confirm the readability of the data.

(3) On line File Transfer Test

The ADEOS-II Project and the NGN Project will exchange samples of mission operation information files between NASDA/EOC and ASF/WFF using the network.

Both projects will confirm the function of delivering the sample files via the network and also will confirm the readability of the files.

3.3.3.3 Mission Simulation Test Part III

(1) Operation Test

The ADEOS-II Project and the NGN Project will confirm the operability of both ground segments according to the operation time line by using samples of mission operation information files and mission data.

3.3.3.4 Mission Simulation Test Part IV

(1) End-to-End Test

(1-1) Mission Data Test

~~TBD~~
The ADEOS-II Project will acquire raw data from the ADEOS-II spacecraft during the End-to-End command test and will deliver it to ASF and WFF using D1 cassette as needed.

3.3.3.5 Result Report

The ADEOS-II Project and the NGN Project will mutually report the results of the above tests within one month of completion of all test items. Both projects should promptly report the results to each other after completion of each test item.

3.3.4 NOAA

3.3.4.1 Mission Simulation Test part I

(1) Data Pattern Test

The ADEOS-II Project will generate SeaWinds Level 0, DCS Level 0 and selected GLI 1km Level 1A test data and will deliver the data to NOAA using physical media .

NOAA will confirm the formats and readability of the data.

NOAA will generate SeaWinds Met test data and will deliver it to NASDA/EOC using physical media.

The ADEOS-II Project will confirm the format and readability of the data.

(2) Off line File Transfer Test

The ADEOS-II Project will generate samples of mission operation information files and will deliver the files to NOAA using Internet or physical media. ~~or Internet (TBD).~~

NOAA will confirm the formats and readability of the files.

3.3.4.2 Mission Simulation Test part II

(1) Network Connection Test

The computer network connection to exchange SeaWinds Level 0, DCS Level 0, selected GLI 1km Level 1A, SeaWinds Met data and mission operation information files between NASDA/EOC and NOAA will be confirmed.

(2) Data Transfer Test

The ADEOS-II Project will deliver the SeaWinds Level 0, DCS Level 0 and selected GLI 1km Level 1A test data from NASDA/EOC to NOAA using the network.

NOAA will confirm the function of receiving the test data via the network and also will confirm the readability of the data.

NOAA will deliver the SeaWinds Met test data from NOAA to NASDA/EOC using the network.

The ADEOS-II Project will confirm the function of receiving the test data via the network and also will confirm the readability of the data.

(3) On line File Transfer Test

The ADEOS-II Project will deliver samples of mission operation information files to NOAA using the network.

The ADEOS-II Project and NOAA will confirm the function of exchanging the sample files via the network and also will confirm the readability of the files.

3.3.4.3 Mission Simulation Test part III

(1) Operation Test

The ADEOS-II Project and NOAA will confirm the operability of both ground segments according to the operation time line by using samples of mission operation information files and mission data.

3.3.4.4 Mission Simulation Test part IV

(1) End-to-End Test

(1-1) Mission Data Test

~~TBD~~
The ADEOS-II Project will acquire raw data from the ADEOS-II spacecraft during the End-to-End command test and will process it to SeaWinds level 0 test data.

The ADEOS-II Project will deliver the level 0 test data from NASDA/EOC to NOAA using the network as needed.

3.3.4.5 Result Report

The ADEOS-II Project and NOAA will mutually report the results of the above tests within one month of completion of all test items. Both projects should promptly report the results to each other after completion of each test item.

3.3.5 ADEOS-II Project

Already described in section 3.3.1 through 3.3.4.

3.3.6 Operation Training

The ADEOS-II Project will perform the ADEOS-II ground segment operation training in order that all operation staff can obtain the knowledge necessary for actual operations and can ensure successful operations through practices with the ADEOS-II ground segment. This training will be conducted before the launch of ADEOS-II and with the cooperation of affiliated agencies including the SeaWinds Project, the EOSDIS Project, the NGN Project and NOAA.

All Projects will mutually report the total result of the Operation Training within one month after training.

3.4 Early Orbit Operation Phase

3.4.1 SeaWinds Project

3.4.1.1 On-orbit Operations

The ADEOS-II Project will prepare and conduct the spacecraft (SC) initial operations including turn-on, mode changes and initial check-out sequence of SeaWinds.

The ADEOS-II Project will determine and control the SC orbit and will perform housekeeping and mission operations for the SC including SeaWinds based on the SeaWinds portion of the SOOH. Housekeeping status of SeaWinds will be reported to the SeaWinds Project daily except on NASDA holidays. SC status will be reported periodically.

The SeaWinds Project will send personnel to NASDA to support the SeaWinds initial check-out.

3.4.1.2 Mission Operation Planning

The ADEOS-II Project will develop a mission operation plan in accordance with the operation schedule as mutually agreed.

3.4.1.3 Mission Data Operation

The ADEOS-II Project will acquire the raw mission data at NASDA/EOC and will generate SeaWinds Level 0 data and HK source packet data. The ADEOS-II Project will deliver the SeaWinds Level 0 data and HK source packet data to SeaPAC on a near real-time basis via electronic file transfer.

The SeaWinds Project will process SeaWinds Level 0 data to produce Level 1B, 2A and 2B products and to check-out the SeaWinds instrument. The SeaWinds Project will also process HK source packet data to check-out the SeaWinds instrument. The SeaWinds Project will report to NASDA on the verification result.

3.4.2 EOSDIS Project

3.4.2.1 Mission Data Operation

The EOSDIS Project will deliver SeaWinds Level 1B, 2A and 2B products, which are generated by the SeaWinds Project, to NASDA/EOC for operation verification. (TBD)

The ADEOS Project will generate AMSR Level 1B test data ~~products~~ and will deliver them to PO.DAAC for operation verification ~~(TBD)~~.

3.4.3 NGN Project

3.4.3.1 Post-launch Compatibility Test

The ADEOS-II Project and the NGN Project will perform an RF compatibility test between the SC and the ASF/WFF in accordance with the "Post-launch Compatibility Test Plan" and the operation

schedule as mutually agreed. The NGN Project will report the results to the ADEOS-II Project in a mutually agreed format.

3.4.3.2 Mission Operation Planning

The ADEOS-II Project will make mission operation plans in accordance with the data acquisition schedule as mutually agreed.

3.4.3.3 Mission Data Operation

The ADEOS-II Project will make available the SC transmit recorded and/or real-time raw data from ADEOS-II sensors to ASF and WFF for testing.

The NGN Project will acquire the raw mission data, and will deliver the data to the ADEOS-II Project for testing. The NGN Project will process the raw data to the Level 0 data and HK source packet data, and will deliver these data to NASDA/EOC via electronic file transfer.

The NGN Project will deliver SeaWinds Level 0 data and HK source packet to SeaPAC and will deliver SeaWinds Level 0 data, selected GLI 1km Level 0 data and DCS Level 0 data to NOAA using the network.

3.4.4 NOAA

3.4.4.1 Mission Data Operation

The ADEOS-II Project will deliver SeaWinds Level 0 data, DCS Level 0 data and selected GLI 1km Level 1A data to NOAA for testing on a near real-time basis via electronic file transfer.

NOAA will process the SeaWinds Level 0 data to produce SeaWinds Met data and will deliver the data to NASDA/EOC via electronic file transfer for operation verification.

3.4.5 ADEOS-II Project

Already described in section 3.4.1 through section 3.4.4.

3.5 Routine Operation Phase

3.5.1 Data Capture Mode 1

3.5.1.1 SeaWinds Project

3.5.1.1.1 On-orbit Operations

The ADEOS-II Project will conduct the routine operations of the SC including SeaWinds.

The ADEOS-II Project will determine and control the SC orbit and will perform housekeeping and mission operations for the SC including SeaWinds based on the SeaWinds portion of the SOOH. Housekeeping status of SeaWinds will be reported to the SeaWinds Project daily except on NASDA holidays. SC status will be reported periodically.

3.5.1.1.2 Mission Operation Planning

The SeaWinds Project will provide the ADEOS-II Project with SeaWinds mission operation requests according to the mission planning schedule specified in the MOIS.

The ADEOS-II Project will make a mission operation plan incorporating the instrument operation requests within the constraints of the SC, IOCS resources and the ground station resources and will inform the SeaWinds Project of the plan.

3.5.1.1.3 Mission Data Operation

The ADEOS-II Project will acquire MDR data at NASDA/EOC via IOCS and will prepare the SeaWinds Level 0 data and HK source packet data for delivery to SeaPAC on a near real-time basis via electronic file transfer.

The SeaWinds Project will process SeaWinds Level 0 data to produce Level 1B, 2A and 2B products at SeaPAC.

The SeaWinds Project will process HK source packet data to monitor the health and safety of the SeaWinds instrument.

The ADEOS-II Project will process Dynamics Monitoring System (DMS) data to monitor the health and safety of ADEOS-II, and the processed DMS data will be delivered to SeaPAC using the network on an operational basis.

3.5.1.2 EOSDIS Project

3.5.1.2.1 Mission Data Operation

The EOSDIS Project will deliver SeaWinds Level 1B, 2A and 2B products using 8mm tape and corresponding inventory information via electronic file transfer to NASDA/EOC (TBD).

The ADEOS-II Project will acquire MDR data via IOCS and will prepare AMSR Level 1B product for delivery to PO.DAAC on a near real-time basis via electronic file transfer.

3.5.1.3 NGN Project

3.5.1.3.1 Ground Segment Operation Planning

The ADEOS-II Project will provide the NGN Project with data capture requests according to the mission planning schedule specified in the MOIS.

The NGN Project will incorporate the requests into the NASA ground station operation plan at ASF/WFF and will inform the ADEOS-II Project of the plan. If a conflict arises between the data capture requests and the NASA ground station operation plan, the conflict shall be resolved by mutual effort and agreement.

3.5.1.3.2 Mission Data Operation

The ADEOS-II Project will command the SC to transmit real-time GLI 250m data and Mission Real-Time (MRT) data via X-band transmission to ASF/WFF.

The NGN Project will acquire GLI 250m data at ASF/WFF via X-band transmission (X1) and will deliver it to NASDA/EOC using D1 cassette. The NGN Project will acquire MRT data at ASF/WFF via X band transmission (X3) and will process it to the DCS Level 0 data for delivery to NASDA/EOC and to CNES (CLS/Largo) through NOAA on a near real-time basis via electronic file transfer. The NGN Project will also process MRT data to GLI 1km Level 0 data for delivery to NOAA on a near real-time basis via electronic file transfer. Moreover, the NGN Project will process MRT data to Visual Monitoring System (VMS) and DMS Level 0 data for delivery to NASDA/EOC via electronic file transfer.

3.5.1.4 NOAA

3.5.1.4.1 Mission Operation Planning

The ADEOS-II Project will inform NOAA of the SeaWinds, DCS and GLI 1km operation plan which was developed based on the mission operation requests from the SeaWinds Project, CNES/Service ARGOS and ADEOS-II Project within the constraints of SC resources, IOCS resources and ground station resources.

3.5.1.4.2 Mission Data Operation

The ADEOS-II Project will acquire MDR data via IOCS at NASDA/EOC and will prepare the SeaWinds Level 0 data, DCS Level 0 data and the selected GLI 1km Level 1A product for delivery to NOAA on a near real-time basis via electronic file transfer. The ADEOS-II Project will also acquire MRT data via IOCS or X band transmission (X3) at NASDA/EOC and will process it to DCS Level 0 data for delivery to NOAA on a near real-time basis via electric file transfer.
Additionally, the ADEOS-II Project will acquire MRT data via X band transmission (X3) at Kiruna station. The MRT data will be processed to the DCS Level 0 data at Kiruna station for delivery to NOAA through NASDA/EOC.

NOAA will process SeaWinds Level 0 data to produce SeaWinds Met Data and will deliver the data to NASDA/EOC on a near real-time basis via electronic file transfer.

NOAA will forward DCS Level 0 data, which was transmitted from NASDA/EOC, Kiruna station, ASF and WFF, to CNES (CLS/Largo) on a near real-time basis via electronic file transfer.

3.5.1.5 ADEOS-II Project

Already described in section 3.5.1.1 through section 3.5.1.4.

3.5.2 Data Capture Mode 2

3.5.2.1 SeaWinds Project

3.5.2.1.1 On-orbit Operations

(Same as section 3.5.1.1.1)

3.5.2.1.2 Mission Operation Planning

(Same as section 3.5.1.1.2)

3.5.2.1.3 Mission Data Operation

The ADEOS-II Project will acquire MDR data via X band transmission (X1) at NASDA/EOC and Kiruna station. The MDR data will be processed to the SeaWinds Level 0 data and HK source packet data at NASDA/EOC and Kiruna station for delivery to SeaPAC on a near real-time basis via electronic file transfer.

The MDR data which are not obtainable at NASDA ground stations (NASDA/EOC and Kiruna station) will be acquired at ASF/WFF via X band transmission (X1). The MDR data will be processed to SeaWinds Level 0 data and HK source packet data at ASF/WFF.

The SeaWinds Level 0 data and HK source packet data will be delivered to SeaPAC on a near real-time basis via electronic file transfer as well as the data flow from NASDA.

The SeaWinds Project will process SeaWinds Level 0 data received from NASDA/EOC, Kiruna station, ASF and WFF to produce Level 1B, 2A and 2B products.

The SeaWinds Project will process ADEOS-II HK source packet data to monitor the health and safety of the SeaWinds instrument.

If for some reason SeaWinds Level 0 data are not delivered to SeaPAC from ASF/WFF, the ADEOS-II Project will retrieve the data from the MDR data shipped from ASF/WFF by D1 cassette, and will deliver it to SeaPAC.

The ADEOS-II Project will process DMS data to monitor the health and safety of ADEOS-II, and the processed DMS data will be delivered to SeaPAC using the network on an operational basis.

3.5.2.2 EOSDIS Project

3.5.2.2.1 Mission Data Operation

(Same as section 3.5.1.2.1)

3.5.2.3 NGN Project

3.5.2.3.1 Ground Segment Operation Planning

(Same as section 3.5.1.3.1)

3.5.2.3.2 Mission Data Operation

The ADEOS-II Project will command the SC to transmit real-time GLI 250m data, Mission Real-Time (MRT) data, ODR recorded data and MDR recorded data via X-band transmission to ASF/WFF.

The NGN Project will acquire MDR, ODR and GLI 250m data via X band transmission (X1) at ASF/WFF and will deliver the data to NASDA/EOC using D1 cassette.

From MDR data the NGN Project will generate Level 0 data for AMSR, ILAS-II, SeaWinds, DCS, GLI 1km, VMS~~* (Visual Monitoring System)~~, DMS~~* (Dynamic Monitoring System)~~, and HK source packet data. The NGN will deliver these data except for the level 0 data of SeaWinds and GLI 1km to NASDA/EOC on a near real-time basis via electronic file transfer.

~~* : VMS and DMS level 0 data is processed at ASF/WFF and provided to NASDA/EOC, when NASDA requests (TBD).~~

The NGN Project will provide the SeaWinds Level 0 data to NOAA and SeaPAC, the DCS Level 0 data to CNES (CLS/Largo) through NOAA, and the GLI 1km Level 0 data to NOAA on a near real-time basis via electronic file transfer.

The NGN Project will acquire MRT data via X band transmission (X3) at ASF/WFF and will process it to DCS Level 0 data for delivery to NASDA/EOC and to CNES (CLS/Largo) through NOAA on a near real-time basis via electronic file transfer. The NGN Project will also process the MRT data to GLI 1km Level 0 data for delivery to NOAA on a near real-time basis via electronic file transfer. Moreover, the NGN Project will process MRT data to VMS and DMS Level 0 data for delivery to NASDA/EOC via electronic file transfer.

In the event of a data stripper failure, the MDR data processing will have priority over the MRT data processing. In the event of HDDR failure, the MDR data recording will have priority over GLI 250m and ODR data recording.

3.5.2.4 NOAA

3.5.2.4.1 Mission Operation Planning

(Same as section 3.5.1.4.1)

3.5.2.4.2 Mission Data Operation

The ADEOS-II Project will acquire MDR data via X band transmission (X1) at NASDA/EOC and Kiruna station and will prepare the SeaWinds and DCS Level 0 data for delivery to NOAA on a near real-time basis via electronic file transfer.

The MDR data not obtainable at the NASDA ground stations (NASDA/EOC and Kiruna station) will be acquired at ASF/WFF via X band transmission (X1). The MDR data will be processed to the

SeaWinds and DCS Level 0 data at ASF/WFF for delivery to NOAA on a near real-time basis via electronic file transfer.

NOAA will process SeaWinds Level 0 data received from NASDA/EOC, Kiruna station, ASF and WFF to produce SeaWinds Met data and deliver the data to NASDA/EOC on a near real-time basis via electronic file transfer.

The NGN Project will acquire MDR data and MRT data via X band transmission (X1, X3) at ASF/WFF and process these data to GLI 1km level 0 data for delivery to NOAA on a near real-time basis via electronic file transfer.

The GLI 1km data not obtainable at ASF/WFF will be acquired at NASDA/EOC and Kiruna station in the MDR data. The MDR data will be processed to the selected GLI 1km Level 1A product at NASDA/EOC and Kiruna station for delivery to NOAA on a near real-time basis via electronic file transfer.

NOAA will forward DCS Level 0 data transmitted from NASDA/EOC, Kiruna station, ASF and WFF to CNES (CLS/Largo) on a near real-time basis via electronic file transfer.

3.5.2.5 ADEOS-II Project

Already described in section 3.5.2.1 through section 3.5.2.4.

The responsibilities of each project are summarized in Table 3.1 for both data capture modes 1 and 2.

Table 3.1 Responsibilities of each project during routine operation phase

Operation	Project	Responsibilities	
		Mode 1	
Mission Operation Planning	SeaWinds Proj. (SeaPAC)	Make SeaWinds mission operation request and provide it to NASDA/EOC.	Same as Mode 1
	ADEOS-II Proj. (NASDA/EOC)	Make mission operation plan incorporating mission operation requests. Provide: - SeaWinds operation plan to SeaPAC - SeaWinds, DCS and GLI operation plan to NOAA	Same as Mode 1
Ground Segment Operation Planning	ADEOS-II Proj. (NASDA/EOC)	Make data acquisition request and provide it to ASF and WFF.	Same as Mode 1
	NGN Proj. (ASF, WFF)	Resolve conflict between the ADEOS-II data acquisition request and operation plan of each station.	Same as Mode 1
Data Acquisition	ADEOS-II Proj. (NASDA EOC)	Acquire: - MDR data via IOCS - MRT data via IOCS or X band (X3)	Acquire: - MDR data via X - MRT data via X
	ADEOS-II Proj. (Kiruna Station)	Acquire: - MRT data via X band (X3)	Acquire: - MDR data via X - MRT data via X
	NGN Proj. (ASF, WFF)	Acquire: - GLI 250m data via X band (X1) - MRT data via X band (X3)	Acquire: - MDR, GLI 250r - MRT data via X
Raw Data Shipping	ADEOS-II Proj. (Kiruna Station)	N/A to this MOIP	Ship MDR raw da cassette
	NGN Proj. (ASF, WFF)	Ship GLI 250m raw data to NASDA/EOC using D1 cassette	Ship MDR, GLI 2 NASDA/EOC usi

Table 3.1 Responsibilities of each project during routine operation phase (cont.)

Operation	Project	Responsibilities	
		Mode 1	
Level 0 Data Processing	ADEOS-II Proj. (NASDA/EOC)	Process: - MDR data to SeaWinds, DCS, AMSR, DMS and GLI 1km level 0 data and HK source packet - MRT data to DCS and DMS level 0 data	Process: - MDR data to S GLI 1km level 0 - MRT data to D
	ADEOS-II Proj. (Kiruna Station)	Process MRT data to DCS and DMS level 0 data.	Process: - MDR data to S GLI 1km level 0 - MRT data to D
	NGN Proj. (ASF, WFF)	Process MRT data to GLI 1km, VMS, DMS and DCS level 0 data	Process: - MDR data to S DMS, AMSR, V data and HK so - MRT data to GI 0 data
Level 0 Data Distribution	ADEOS-II Proj. (NASDA/EOC)	Deliver: - SeaWinds level 0 data and HK source packet to SeaPAC using the network - SeaWinds and DCS level 0 data to NOAA using the network	Deliver: - SeaWinds level SeaPAC using - SeaWinds and the network
	ADEOS-II Proj. (Kiruna Station)	Deliver: - DMS level 0 data to NASDA/EOC using the network - DCS level 0 data to NOAA using the network through NASDA/EOC	Deliver: - SeaWinds level SeaPAC using - SeaWinds and the network thr - AMSR and DM using the netwo

Table 3.1 Responsibilities of each project during routine operation phase (cont.)

Operation	Project	Responsibilities	
		Mode 1	
Level 0 Data Distribution (cont.)	NGN Proj. (ASF, WFF)	Deliver: - GLI 1km and DCS level 0 data to NOAA using the network - DCS, VMS and DMS level 0 data to NASDA/EOC using the network	Deliver: - SeaWinds level SeaPAC using - SeaWinds, GLI NOAA using the - AMSR, ILAS-II, to NASDA/EOC
	NOAA	Forward DCS level 0 data to CLS/Largo	Same as Mode 1
Near Real Time Product Processing and Distribution	ADEOS-II Proj. (NASDA/EOC)	Process: - GLI 1km level 0 data to selected level 1A product and deliver it to NOAA using the network - AMSR level 0 data to level 1B product and deliver it to PO.DAAC using the network - DMS level 0 data (including Kiruna, ASF and WFF acquired data) to level 1 data and deliver it to SeaPAC using the network.	Process: - GLI 1km level 0 and deliver it to - AMSR level 0 d WFF acquired deliver it to PO. - DMS level 0 da WFF acquired to SeaPAC usi
	ADEOS-II Proj. (Kiruna Station)	N/A to this MOIP	Process GLI 1km product and deliv through NASDA/
	NOAA	Process SeaWinds level 0 data to SeaWinds Met data and deliver it to NASDA/EOC using the network	Same as Mode 1
Standard Product Processing	SeaWinds Proj. (SeaPAC)	Process SeaWinds level 0 data to level 1B, 2A and 2B products	Same as Mode 1
Standard Product Distribution	EOSDIS Proj. (PO.DAAC)	Deliver SeaWinds level 1B, 2A and 2B products to NASDA/EOC using 8mm tape (TBD)	Same as Mode 1

3.6 Common Services

3.6.1 Flight Operation

The ADEOS-II Project shall generate the commands based on the mission operation plan and transmit them to the SC.

The ADEOS-II Project shall also determine and control the SC orbit and shall perform housekeeping of the SC including mission instruments based on the SOOH. Status of the SC will be reported periodically and the housekeeping of the mission instruments will be reported daily except on NASDA holidays.

3.6.2 Archiving

The ADEOS-II Project will store all ADEOS-II raw data including the raw data acquired at ASF and WFF for both data capture modes 1 and 2.

The EOSDIS Project will archive all SeaWinds Level 0 data and standard products processed by the SeaWinds Project provided from SeaPAC and the AMSR level 1B product provided from NASDA/EOC.

The NGN Project will temporarily store back-up D1 cassette of all MDR, GLI 250m and ODR raw data acquired at their facilities for both data capture modes 1 and 2. The NGN Project will be able to erase the data after receipt of readability good report from EOC or 30 days after data acquisition, whichever occurs first. In the case of readability problem report from NASDA/EOC, the NGN will ship the corresponding back up cassette to NASDA/EOC. ~~(TBD).~~ The detailed procedure will be defined in the MOIS.

The NGN Project will store temporally all ADEOS-II Level 0 data processed at their facilities for ~~both~~ data captured both in modes 1 and 2 for~~during the~~ 96~~24~~ hours ~~(TBD)~~ after data acquisition.

The EOIS Project will store SeaWinds Level 1B, 2A and 2B products delivered from PO.DAAC (TBD).

3.6.3 Communication Network

The EOSDIS Project shall provide the communication network between NASA and NOAA for ADEOS-II Project support.

The EOIS Project shall provide the communication network between NASDA and Japanese ADEOS-II sensor providers. The EOIS Project shall also provide the communication network between EOC, TACC and Kiruna Station.

The EOSDIS Project and the EOIS Project shall provide the international communication network between Japan and the US.

The network details will be defined in the Network ICD.

3.6.4 Media and Format

The Projects shall use media and electronic communications in formats as mutually agreed upon for exchanging all mission data and mission operation information.

The media and format employed during Flight Operations shall be the same as that used in the mission simulation test. The media and format shall be mutually agreed to prior to this test.

The MOIS and the Network ICD will specify design details of the media, electronic communications and format.

3.6.5 User Services

NASDA and NASA will create and maintain the inventory information of the ADEOS-II mission data higher level products each agency acquired and/or processed at its facilities. They will exchange the information by means of standardized formats. Each agency will operate its own inventory system to provide inventory information to users and will establish catalog interoperability among the inventory systems. Higher level products prepared for operational purposes will be excluded from this inventory.

Each agency will create and maintain the directory information of the ADEOS-II mission data which each agency acquires and/or processes at its facilities and will load the information in one of the CEOS-IDN (International Directory Network) coordinating nodes.

All of the agencies will provide linking capabilities of their inventory information system with one of the CEOS-IDN nodes.

Data distribution to users is TBD.

The MOIS and the Catalogue ICD will specify design detail of the catalogue interoperability and format of directory and inventory.

3.7 Anomaly on Orbit

3.7.1 Report of Anomaly

The ADEOS-II Project will immediately report detected SC and instrument anomalies to the SeaWinds Project, the EOSDIS Project, the NGN Project and NOAA.

The NGN Project will immediately report anomalies detected during data acquisition and Level 0 data processing to the ADEOS-II Project .

The SeaWinds Project will immediately report anomalies detected during SeaWinds HK data monitoring and data processing to the ADEOS-II Project.

The ADEOS-II Project shall document anomalies in a formal failure reporting system of NASDA.

The procedures and tools for anomaly reporting are defined in Appendix D.

3.7.2 Investigation and Resolution of Anomaly

The ADEOS-II Project and SeaWinds Project will cooperate to investigate and resolve on-orbit SC and SeaWinds instrument anomalies.

The SeaWinds Project shall provide inputs for the failure reporting, if necessary, and the corrective disposition affecting SeaWinds shall be as mutually agreed.

3.7.3 SeaWinds Turn-Off and Rescheduling

In the event of a declared SC emergency, the SeaWinds Project, the EOSDIS Project and NOAA recognize that SeaWinds may be turned off. The operation schedule of SeaWinds may be changed by the ADEOS-II Project before consulting with the SeaWinds Project. Every effort shall be made to conform to pre-established emergency procedures should an emergency occur. NASDA shall immediately report to the SeaWinds Project any emergencies concerning the SeaWinds instrument.

3.8 Anomaly of Ground Segment

The NGN Project will immediately report detected ground segment anomalies affecting other projects to the ADEOS-II Project. The ADEOS-II Project will also immediately report detected ground segment anomalies affecting other projects to the SeaWinds Project, the EOSDIS Project, the NGN Project, NOAA and other affected projects and will also report to them after the anomalies have been resolved.

4. Deliverables

4.1 Destination

4.1.1 Mission Data

NASDA, NASA and NOAA designate their respective delivery destinations for transportation or transmission of mission data including simulated mission data for testing, as follows:

NASDA:	NASDA/EOC
NASA:	NASA/SeaPAC, JPL/PO.DAAC, NASA/ASF, NASA/WFF
NOAA:	NOAA/NESDIS

NASDA, NASA and NOAA will use the Data Distribution Subsystem (DDS) at NASDA/EOC and the designated systems by NASA/NOAA as the access point to exchange mission data via electronic file transfer. The data to be sent from NASDA will be placed in the DDS by the due time, and the NASA or NOAA will access the DDS and get the data. The data to be sent from NASA or NOAA will be placed in the NASA/NOAA designated systems by the due date, and the NASDA will access the systems and get the data. NASDA, NASA and NOAA will use an E-mail to inform each other of the readiness of a file or the receipt of a file.

4.1.2 Mission Operation Information

NASDA, NASA and NOAA will also use the Data Distribution Subsystem (DDS) at NASDA/EOC and the designated systems of NASA/NOAA as the access point to exchange mission operation information as well as on-line mission data.

4.1.3 Back Up Method

In the event of an extended interruption of the electronic link between NASDA and NASA/NOAA, the mission data and the mission operation information will be exchanged using method~~media~~ as mutually agreed. The detailed back up method will be specified in the MOIS.

4.1.4 HDDR

Corresponding to “Necessary Equipment” defined at Article IX of the MOU between NASDA and NASA/NOAA for cooperation in ADEOS-II program, t~~T~~he NASA ground stations will utilize the six sets of HDDRs which are being placed at ASF and WFF by NASDA for the ADEOS program. ~~(TBD).~~

The NASA stations will supply the raw mission data to NASDA/EOC using the equipment placed by NASDA.

The detailed responsibilities of NASDA and NASA on the utilization of the HDDRs shall conform with the description in ~~section 4.1.7 and~~ Appendix G~~E~~ which is same as Appendix G of the ADEOS MOIP. ~~(TBD).~~

4.1.5 GLI Processing Software

For the purpose of US Coast Watch program, NOAA will process GLI 1km data at its facility using software provided from NASDA.

The responsibilities of NASDA and NOAA for the GLI data processing software to be delivered to NOAA from NASDA are specified in Appendix E.

4.1.6 Packet Processor

NOAA will provide, with NASA's support, two sets of packet processors to NASDA.

NASDA will process SeaWinds data, DCS data and GLI 1km data using these packet processors and deliver these data to NOAA on a near real-time basis.

The detailed responsibilities of NASDA, NOAA and NASA for the provision of these packet processors from NOAA to NASDA are specified in Appendix F.

4.2 Deliverables

4.2.1 SeaWinds Project

Tables 4.1 and 4.2 list the deliverables between the SeaWinds Project and the ADEOS-II Project. Table 4.3 lists the deliverables between the SeaWinds Project and the NGN Project. For each deliverable item, the media, destination and date due are shown.

Table 4.1 Deliverables from the SeaWinds Project to the ADEOS-II Project

No	Items	Destination	Media	Due Date
1	Mission operation request	NASDA/EOC	On-line	Opr. Basis
2	SeaWinds data commands	NASDA/EOC	On-line and Fax	Opr. Basis
3	Readability problem report of Level 0 data	NASDA/EOC	Fax.	Opr. Basis
4	Samples of mission operation files	NASDA/EOC	*	*
5	SeaWinds calibration data coefficient	NASDA/EOC	8mm tape ~~TBD~~	3 months before launch ~~TBD~~

*) Specified in the Mission Simulation Test Plan.

Table 4.2 Deliverables from the ADEOS-II Project to the SeaWinds Project

No	Items	Destination	Media	Due Date
1	SeaWinds Level 0 data	NASA/SeaPAC	On-line	Opr. Basis
2	Mission operation plan/result	NASA/SeaPAC	On-line	Opr. Basis
3	HK source packet data	NASA/SeaPAC	On-line	Opr. Basis
4	DMS processed data	NASA/SeaPAC	On-line	Opr. Basis
5	Orbit data	NASA/SeaPAC	On-line	Opr. Basis
6	Time difference data	NASA/SeaPAC	On-line	Opr. Basis
7	Satellite/Station status information	NASA/SeaPAC	On-line	Opr. Basis
8	SeaWinds Level 0 test data	NASA/SeaPAC	*	*
9	HK source packet test data	NASA/SeaPAC	*	*
10	Samples of mission operation files	NASA/SeaPAC	*	*
11	DMS processed test data	NASA/SeaPAC	*	*

*) Specified in the Mission Simulation Test Plan.

Table 4.3 Deliverables from the NGN Project to the SeaWinds Project

No	Items	Destination	Media	Due Date
1	SeaWinds Level 0 data	NASA/SeaPAC	On-line	Opr. Basis (only in mode 2)
2	HK source packet	NASA/SeaPAC	On-line	Opr. Basis (only in mode 2)

4.2.2 EOSDIS Project

Tables 4.4 and 4.5 list the deliverables between the EOSDIS Project and the ADEOS-II Project. For each deliverable item, the media, destination and date due are shown.

Table 4.4 Deliverables from the EOSDIS Project to the ADEOS-II Project

No	Items	Destination	Media	Due Date
1	SeaWinds Level 1B, 2A and 2B data products	NASDA/EOC	8 mm tape	Opr. Basis (TBD)
2	SeaWinds directory entries and inventory data	NASDA/EOC	On-line	Opr. Basis
3	SeaWinds Level 1B, 2A and 2B test data products	NASDA/EOC	*	*

*) Specified in the Mission Simulation Test Plan.

Table 4.5 Deliverables from the ADEOS-II Project to the EOSDIS Project

No	Items	Destination	Media	Due Date
1	AMSR Level 1B data product	PO.DAAC	On-line	Opr. Basis
2	AMSR Level 1B test data product	PO.DAAC	*	*

*) Specified in the Mission Simulation Test Plan.

4.2.3 NGN Project

Tables 4.6 and 4.7 list the deliverables between the NGN Project and the ADEOS-II Project. For each deliverable item, the media, destination and date due are shown.

Table 4.6 Deliverables from the NGN Project to the ADEOS-II Project

No	Items	Destination	Media	Due Date
1	GLI 250m raw data	NASDA/EOC	D1-M cassette	Opr. Basis
2	MDR recorded raw data	NASDA/EOC	D1-M cassette	Opr. Basis (only in mode 2)
3	ODR recorded raw data	NASDA/EOC	D1-M cassette	Opr. Basis (only in mode 2)
4	DCS Level 0 data	NASDA/EOC	On-line	Opr. Basis
5	AMSR Level 0 data	NASDA/EOC	On-line	Opr. Basis (only in mode 2)
6	ILAS-II Level 0 data	NASDA/EOC	On-line	Opr. Basis (only in mode 2)
7	VMS Level 0 data	NASDA/EOC	On-line	Opr. Basis (only in mode 2)
8	DMS Level 0 data	NASDA/EOC	On-line	Opr. Basis (only in mode 2)
9	Ground station operation plan	NASDA/EOC	On-line	Opr. Basis
10	Acquisition result	NASDA/EOC	On-line	Opr. Basis
11	Shipment report of raw data	NASDA/EOC	On-line	Opr. Basis
12	ADEOS-II test raw data	NASDA/EOC	*	*
13	ADEOS-II test Level 0 data	NASDA/EOC	*	*
14	Samples of mission operation files	NASDA/EOC	*	*

*) Specified in the Mission Simulation Test Plan.

Table 4.7 Deliverables from the ADEOS-II Project to the NGN Project

No	Items	Destination	Media	Due Date
1	Acquisition request	NASA/ASF/WFF	On-line	Opr. Basis
2	Mission operation plan	NASA/ASF/WFF	On-line	Opr. Basis
3	Orbit data	NASA/ASF/WFF	On-line	Opr. Basis
4	Time difference data	NASA/ASF/WFF	On-line	Opr. Basis
5	Satellite/Station status information	NASA/ASF/WFF	On-line	Opr. Basis
6	Readability report of raw data	NASA/ASF/WFF	On-line	Opr. Basis
7	ADEOS-II test raw data	NASA/ASF/WFF	*	*
8	ADEOS-II test Level 0 data	NASA/ASF/WFF	*	*
9	Samples of mission operation files	NASA/ASF/WFF	*	*

*) Specified in the Mission Simulation Test Plan.

4.2.4 NOAA

Tables 4.8 and 4.9 list the deliverables between NOAA and the ADEOS-II Project. Table 10 lists the deliverables between the NGN Project and NOAA. For each deliverable item, the media, destination and date due are shown.

Table 4.8 Deliverables from NOAA to the ADEOS-II Project

No	Items	Destination	Media	Due Date
1	SeaWinds Met data	NASDA/EOC	On-line	Opr. Basis
2	SeaWinds Met test data	NASDA/EOC	*	*

*) Specified in the Mission Simulation Test Plan.

Table 4.9 Deliverables from the ADEOS-II Project to NOAA

No	Items	Destination	Media	Due Date
1	SeaWinds Level 0 data	NOAA/NESDIS	On-line	Opr. Basis
2	DCS Level 0 data	NOAA/NESDIS	On-line	Opr. Basis
3	Selected GLI 1km Level 1A product	NOAA/NESDIS	On-line	Opr. Basis
4	Mission operation plan/result	NOAA/NESDIS	On-line	Opr. Basis
5	Orbit data	NOAA/NESDIS	On-line	Opr. Basis
6	Time difference data	NOAA/NESDIS	On-line	Opr. Basis
7	Satellite/Station status information	NOAA/NESDIS	On-line	Opr. Basis
8	GLI calibration data coefficient	NOAA/NESDIS	8mm tape ~~TBD~~	May 1999 ~~TBD~~
9	GLI processing software	NOAA/NESDIS	8mm tape	May 1999
10	SeaWinds Level 0 test data	NOAA/NESDIS	*	*
11	DCS Level 0 test data	NOAA/NESDIS	*	*
12	Selected GLI 1km Level 1A test product	NOAA/NESDIS	*	*
13	Samples of mission operation files	NOAA/NESDIS	*	*

*) Specified in the Compatibility Test Plan.

Table 4.10 Deliverables from the NGN Project to NOAA

No	Items	Destination	Media	Due Date
1	DCS Level 0 data	NOAA/NESDIS	On-line	Opr. Basis
2	SeaWinds Level 0 data	NOAA/NESDIS	On-line	Opr. Basis (only in mode 2)
3	GLI 1km Level 0 data	NOAA/NESDIS	On-line	Opr. Basis

4.3 Responsibilities for Shipment ~~(TBD)~~

The mission operation information and the mission data to be sent via electronic file transfer will be placed in the designated system of the originator. The receiving side will access the designated system and get the data. NASDA and NASA ~~The receiving agency~~ will bear evenly the session cost to access the system.

The ADEOS-II Project will bear the media and transportation costs for NASA acquired raw mission data. NASA will bear the media costs for the backup recorders.

The EOSDIS Project will bear the media and transportation costs for SeaWinds standard products.

The cost responsibilities for mission data shipment between NASDA and NASA are summarized in Table 4.11.

The sending agency will bear the transportation cost of documents, and non-DDS transmitted messages.

Table 4.11 Cost Responsibilities about Mission Data Shipment ~~(TBD)~~

Item		Responsible agency	Comment
Raw data	D1-M cassette (for NASDA recorders)	NASDA	including backup media for trouble.
	D1-M cassette (for backup recorders)	NASA	including backup media for trouble. These tapes will only be sent to NASDA if the primary tape is invalid.
	Transportation	NASDA	including duralumin cases for the transportation and transportation of unformated blank media to NASA.
	Custom tax	NASDA	
	Label	NASDA	
SeaWinds Level 1B, 2A, and 2B Products	8 mm tape	NASA	including backup media for trouble and reprocessing.
	Transportation	NASA	including envelopes for the transportation
	Custom tax	NASDA	
	Label	NASA ~~(TBD)~~	

4.4 Submitted Documents

4.4.1 SeaWinds Project

Table 4.12 lists the documents to be sent from the SeaWinds Project to the ADEOS-II Project with the respective due dates.

Table 4.13 lists the documents to be sent from the ADEOS-II Project to the SeaWinds Project with the respective due dates.

Table 4.12 Submitted Operation Documents from the SeaWinds Project to the ADEOS-II Project

No	Name of Documents	Due Date
1	Data Pattern Test Result	1 month after test
2	Off line File Transfer Test Result	1 month after test
3	Network Connection Test Result	1 month after test
4	Data Transfer Test Result	1 month after test
5	On line File Transfer Test Result	1 month after test
6	Operation Test Result Report	1 month after test
7	End-to-End Test Result Report ~~(TBD)~~	1 month after test
8	Operation Training Result Report	1 month after training
9	Project Readiness Status Report	3 months before launch ~~TBD~~
10	SeaWinds Data Processing Algorithm Description	*~~TBD~~

* Described in scientific literature

Table 4.13 Submitted Operation Documents from the ADEOS-II Project to the SeaWinds Project

No	Name of Documents	Due Date
1	Off line File Transfer Test Result	1 month after test
2	Network Connection Test Result	1 month after test
3	Data Transfer Test Result	1 month after test
4	On line File Transfer Test Result	1 month after test
5	Operation Test Result Report	1 month after test
6	End-to-End Test Result Report ~~(TBD)~~	1 month after test
7	Operation Training Result Report	1 month after training
8	Mission Operations Interface Specification (MOIS), Common Part *	draft: Jul. 1996
9	Mission Operations Interface Specification (MOIS), Individual Part *	draft: Jul. 1997
10	Mission Simulation Test Plan *	draft: Sep. 1997
11	Network IRD *	draft: Dec. 1996
12	Network ICD *	draft: Dec. 1996
13	Level 0 Data Format Specification *	draft: Jul. 1996
14	Format Description of Mission Operation Files *	draft: Aug. 1998

* Co-sign document between the ADEOS-II Project and the SeaWinds Project.

4.4.2 EOSDIS Project

Table 4.14 lists the documents to be sent from the EOSDIS Project to the ADEOS-II Project with the respective due dates.

Table 4.15 lists the documents to be sent from the ADEOS-II Project to the EOSDIS Project with the respective due dates.

Table 4.14 Submitted Operation Documents from the EOSDIS Project to the ADEOS-II Project

No	Name of Documents	Due Date
1	Data Pattern Test Result	1 month after test
2	Network Connection Test Result	1 month after test
3	Data Transfer Test Result	1 month after test
4	On line File Transfer Test Result	1 month after test
5	Operation Test Result Report	1 month after test
6	Operation Training Result Report	1 month after training
7	SeaWinds Science Product User's Handbook	8 months before Launch
8	Project Readiness Status Report	3 months before launch ~~TBD~~
9	SeaWinds Level 1A, 2A and 2B Format Description	draft: current QuikSCAT description ~~TBD~~

Table 4.15 Submitted Operation Documents from the ADEOS-II Project to the EOSDIS Project

No	Name of Documents	Due Date
1	Off line File Transfer Test Result	1 month after test
2	Network Connection Test Result	1 month after test
3	Data Transfer Test Result	1 month after test
4	Standard Product Test Result	1 month after test
5	On line File Transfer Test Result	1 month after test
6	Operation Test Result Report	1 month after test
7	Operation Training Result Report	1 month after training
8	Mission Operations Interface Specification (MOIS), Common Part *	draft: Jul. 1996
9	Mission Operations Interface Specification (MOIS), Individual Part *	draft: Jul. 1997
10	Mission Simulation Test Plan *	draft: Sep. 1997
11	Network IRD *	draft: Dec. 1996
12	Network ICD *	draft: Dec. 1996
13	Catalogue IRD	draft: Dec. 1996
14	Catalog ICD *	draft: July 1998~~TBD~~
15	AMSR Product Format Specification	draft: Nov. 1997
16	Format Description of Mission Operation Files *	draft: Aug. 1998

* Co-sign document between the ADEOS-II Project and the EOSDIS Project.

4.4.3 NGN Project

Table 4.16 lists the documents to be sent from the NGN Project to the ADEOS-II Project with the respective due dates.

Table 4.17 lists the documents to be sent from the ADEOS-II Project to the NGN Project with the respective due dates.

Table 4.16 Submitted Operation Documents from the NGN Project to the ADEOS-II Project

No	Name of Documents	Due Date
1	Data Pattern Test Result	1 month after test
2	Off line File Transfer Test Result	1 month after test
3	Network Connection Test Result	1 month after test
4	Data Transfer Test Result	1 month after test
5	On line File Transfer Test Result	1 month after test
6	Operation Test Result Report	1 month after test
7	Operation Training Result Report	1 month after training
8	NASA Ground Network Operations Plan for ADEOS-II (TBD)	TBD
9	Project Readiness Status Report	3 months before launch ~~TBD~~
10	Post-launch Compatibility Test Result Report	1 month after test

Table 4.17 Submitted Operation Documents from the ADEOS-II Project to the NGN Project

No	Name of Documents	Due Date
1	Data Pattern Test Result	1 month after test
2	Off line File Transfer Test Result	1 month after test
3	Network Connection Test Result	1 month after test
4	Data Transfer Test Result	1 month after test
5	On line File Transfer Test Result	1 month after test
6	Operation Test Result Report	1 month after test
7	Operation Training Result Report	1 month after training
8	Mission Operations Interface Specification (MOIS), Common Part *	draft: Jul. 1996
9	Mission Operations Interface Specification (MOIS), Individual Part *	draft: Jul. 1997
10	Mission Simulation Test Plan *	draft: Sep. 1997
11	ADEOS-II to Ground Stations Interface Document (AGSID)	draft: Dec. 1996
12	Network IRD *	draft: Dec. 1996
13	Network ICD *	draft: Dec. 1996
14	Raw Data Format Specification *	draft: July 1997
15	Level 0 Data Format Specification *	draft: July 1997
16	Format Description of Mission Operation Files *	draft: Aug. 1998
17	Post-launch Compatibility Test Plan	3 months before launch ~~TBD~~

* Co-sign document between the ADEOS-II Project and the NGN Project.

4.4.4 NOAA

Table 4.18 lists the documents to be sent from NOAA to the ADEOS-II Project with the respective due dates.

Table 4.19 lists the documents to be sent from the ADEOS-II Project to NOAA with the respective due dates.

Table 4.18 Submitted Operation Documents from NOAA to the ADEOS-II Project

No	Name of Documents	Due Date
1	Data Pattern Test Result	1 month after test
2	Off line File Transfer Test Result	1 month after test
3	Network Connection Test Result	1 month after test
4	Data Transfer Test Result	1 month after test
5	On line File Transfer Test Result	1 month after test
6	Operation Test Result Report	1 month after test
7	Operation Training Result Report	1 month after training
8	Project Readiness Status Report	3 months before launch ~~TBD~~
9	SeaWinds Met Data Format Description	draft: Jan. 1999 *~~TBD~~

* Quick SCAT description

Table 4.19 Submitted Operation Documents from the ADEOS-II Project to NOAA

No	Name of Documents	Due Date
1	Data Pattern Test Result	1 month after test
2	Network Connection Test Result	1 month after test
3	Data Transfer Test Result	1 month after test
4	On line File Transfer Test Result	1 month after test
5	Operation Test Result Report	1 month after test
6	Operation Training Result Report	1 month after training
7	Mission Operations Interface Specification (MOIS), Common Part *	draft: Jul. 1996
8	Mission Operations Interface Specification (MOIS), Individual Part *	draft: Jul. 1997
9	Mission Simulation Test Plan *	draft: Sep. 1997
10	ADEOS-II to Ground Stations Interface Document (AGSID)	draft: Dec. 1996
11	Network IRD *	draft: Dec. 1996
12	Network ICD *	draft: Dec. 1996
13	SeaWinds Level 0 Data Format Specification *	draft: Dec. 1996
14	GLI Level 0 Data Format Specification *	draft: Jul. 1997
15	GLI Data Product Specification (Product Format)	draft: Dec. 1998
16	GLI Data Product Specification (Algorithm)	draft: Jan. 1999
17	GLI Data Processing Software Operation Manual	draft: Jan. 1999
18	GLI Software Testing Procedure	draft: Jan. 1999
19	Format Description of Mission Operation Files *	draft: Aug. 1998

* Co-sign document between the ADEOS-II Project and NOAA.

5. Ground Segment Reviews

5.1 SeaWinds Project

The SeaWinds Project will prepare the Project Readiness Status Report of its own system by 3 months before launch.

5.2~~1~~ EOSDIS Project

NASDA personnel may observe and comment on ~~the following~~ EOSDIS Project reviews to confirm the interface issues between the ADEOS-II Ground Segment and the EOSDIS Ground Segment.

The EOSDIS Project will prepare the Project Readiness Status Report of its own system by 3 months before launch.
~~TBD~~

5.3~~2~~ NGN Project

NASDA personnel may observe and comment on ~~the following~~ NGN Project reviews to confirm the interface issues between the ADEOS-II Ground Segment and the NASA Data Capture Ground Segment.

The NGN Project will prepare the Project Readiness Status Report of its own system by 3 months before launch.
~~TBD~~

5.4~~3~~ NOAA

NASDA and NASA personnel may observe and comment on ~~the following~~ NOAA reviews to confirm the interface issues between the ADEOS-II Ground Segment and the NOAA Ground Segment.

NOAA will prepare the Project Readiness Status Report of its own system by 3 months before launch.
~~TBD~~

5.54 ADEOS-II Project

NASA and NOAA personnel may observe and comment on ~~the following~~ ADEOS-II Ground Segment reviews to confirm the interface issues between the ADEOS-II Ground Segment and the NASA and NOAA Ground Segments.

The English language will be used for the parts related to the interface between the ADEOS-II Ground Segment and other Ground Segments within the following reviews. The Japanese language will be used for all other parts.

(1) ADEOS-II Ground Segment Design Report meeting (GDR)
March 1998

(2) ADEOS-II Ground Segment Launch Readiness Report Meeting (GLRR)
3 months before launch

(32) ADEOS-II Routine Operation Readiness Report meeting (RORR)
3 months after launch ~~(TBD)~~

(4) ADEOS-II Operation Status Report Meeting (OSR)
#1: 6 months after launch

5.65 EOIS Project

EOIS reviews are included in the above ADEOS-II Ground Segment reviews.
~~NASA and NOAA personnel may observe and comment on the following EOIS reviews to confirm the interface issues between EOIS and the NASA and NOAA Ground Segments.~~

~~The English language will be used for the parts related to the interface between EOIS and other Ground Segments within the following reviews. The Japanese language will be used for all other parts.~~

~~TBD~~

6. Calibration Data

The following projects will provide the instrument calibration coefficients used in the processing of the mission data for the higher level products.

6.1 SeaWinds Project

The SeaWinds Project will provide SeaWinds calibration coefficients to the ADEOS-II Project and NOAA as mutually agreed.

SeaWinds calibration coefficients necessary to process SeaWinds data are only the conversion coefficients of SeaWinds Housekeeping data from data number to engineering units.

6.2 ADEOS-II Project

The ADEOS-II Project will make the GLI calibration coefficients available to NOAA as mutually agreed.

Appendix A Glossary

(1) Multiplexed Data

Multiplexed data are packetized data based on CCSDS and include AMSR, GLI-1Km, ILAS-II, SeaWinds, POLDER, DCS, TEDA, VMS, DMS and HK telemetry data. The data are separated into MDR data and MRT data according to the data transmission method.

(a) MDR data (Data rate: 60Mbps)
MDR data are multiplexed data in MDR reproduce mode and does not include GLI 250m data. MDR data includes multiplexed data of 1 orbit (or 2 orbits).

(b) MRT data (Data rate: 6Mbps)
MRT data are multiplexed data acquired by direct reception at each ground station via X3 or at EOC via IOCS.

(2) GLI 250m data (Data rate: 60Mbps)

GLI 250m data contain observed land area data in daytime and are acquired at each ground station via X1 band, or at EOC via IOCS in real time. GLI 250m data are also recorded on the ODR.

GLI 250m data are acquired in the real time mode and include telemetry data, attitude data and orbit data.

(3) ODR data (Data rate: 60Mbps)

ODR recorded data (mainly GLI 250 m data) are acquired at each ground station via X1 or at EOC via IOCS.

(4) Raw Data

Raw data are the telemetry bit stream from the SC received at ground stations.

(5) Level 0 Data

Level 0 data are packet synchronized and time ordered data.

(6) Level 1A Data

Level 1A data are Level 0 Data that have been formatted and that have all necessary calibration data appended for further processing.

(7) Level 1B Data

Level 1B data are geometrically corrected, radiometrically calibrated data in engineering units at similar resolution and locations as the Level 1A source data.

(8) Level 2 Data

Level 2 data are geophysical parameters retrieved from Level 1B data at similar resolution and locations as the Level 1A source data.

(9) Level 3 Data

Level 3 data are level 2 data that have been mapped onto an agreed upon space-time grid.

(10) Standard Products

Standard Products are selected mission data products (Level 1, Level 2 and Level 3 data) processed routinely for science analysis and publication.

(11) Selected GLI data

Selected GLI data contain selected bands and area data of GLI 1km.

(12) DDS (Data Distribution Subsystem)

DDS is the system designated by NASDA as the access point to exchange Mission Operation Information, near real-time data and meteorological data. DDS will be located in EOC and has two directories in which the data will be stored.

(13) Mission Data

Mission data include the observation data of all onboard sensors and Housekeeping data of all onboard instruments.

(14) Mission Operation Information

Mission operation information refers to the data and information such as mission operation request/plan/result, acquisition request/result, ground station operation plan, orbit data, time difference data, housekeeping telemetry data, satellite and station status information, and mission data shipment/readability reports. The information is used to make the mission operation plan and to perform mission operations.

(15) Housekeeping (for the SeaWinds instrument)

Housekeeping for the SeaWinds Instrument includes all functions performed by the ADEOS-II Project during the mission operations period that are needed to monitor and protect the health, status and safety of the SeaWinds instrument and to conduct normal instrument operations.

(16) HK source packet data

HK source packet data are multiplexed housekeeping data of all onboard instrument including SeaWinds.

(17) Directory Information

The directory information describes where the data is located. The directory information is written in DIF (Directory Interchange Format) and is loaded into CEOS IDN for user's access.

(18) Inventory Information

The inventory information describes the observation parameters and the data type. The inventory information is loaded into an inventory system (catalog system) for user's access. The inventory system links with CEOS IDN and has interoperable capability with the other inventory systems.

(19) On-line Service

On-line services by EOIS are to provide directory, inventory and image catalog (browse) to users.

(20) GDR (Ground Segment Design Report meeting)

GDR refers to the meeting that the agencies related to the ADEOS-II program, including NASDA, the NASA ground stations and sensor providers, and NOAA, will report the preliminary design results of the each ground system.

(21) Ground Segment Launch Readiness Report Meeting (GLRR)

GLRR refers to the meeting that the agencies related to the ADEOS-II program will report the project readiness status of its own system related to the interface on 3 months before launch.

(221) RORR (Routine Operation Readiness Report meeting)

RORR refers to the meeting that the agencies related to the ADEOS-II program, including NASDA, the NASA ground stations and sensor providers, and NOAA, will report the checkout results of the each ground system during the on-orbit checkout period.

(23) Operation Status Report Meeting (OSR)

OSR refers to the meeting that the agencies related to the ADEOS-II program will report the mission operation status during the routine operation period. This OSR meeting will be held periodically until the end of ADEOS-II mission life, and the 1st meeting will be held on 6 months after launch.

Appendix B MOIP Change Proposal (IPCP)

IPCP INSTRUCTIONS:

1. IPCP Number
   (This number will be supplied by the ADEOS-II Project.)

2. Date Issued
   (The date of initiation of the IPCP.)

3. Proposing Organization
   (Name of the IPCP proposing organization, responsible person, and address.)

4. MOIP Paragraph/Section
   (Paragraph/Section of the MOIP proposed to be changed.)

5. Title of the IPCP
   (Title of this IPCP. The title shall be descriptive of the contents of the IPCP.)

6. Necessity of the IPCP
   (Justification (including pertinent history) of this IPCP.)

7. Contents of the IPCP
   (The contents of change proposed.)

8. Affected Documents
   (Titles of documents affected by the change. ex. "MOIS")

9. Attached Documents List
   (Titles, document numbers and issued dates of attached documents shall be listed.)

10. Signature
    (Approval by the proposing Project Manager or his designee.)

NOTE: The following requires coordination between the affected Projects.

11. Final Disposition
(The disposition shall be classified into the following categories by mutual agreement between the affected Project.)

( ) a. Approved
( ) b. Rejected

12. Summary of the Disposition
(In case of Approved (11. (a)), summary of the disposition shall be described here.
In case of Rejected (11. (b)), explanation of the rejection shall be described here.)

13. Signature for Close Out
(In case of Approved (11. (a)), the affected Project Managers shall sign here.
In case of Rejected (11. (b)), the ADEOS-II Project Manager shall sign here.)

IPCP Form

ADEOS-II MOIP Change Proposal (IPCP)	*1. IPCP No. :*
	2. Date Issued :
3. Proposing Organization :	
4. MOIP Paragraph/Section :	
5. Title of the IPCP :	
6. Necessity of the IPCP :	
7. Contents of the IPCP :	
8. Affected Documents :	9. Attached Documents List :
10. Signature :	
Final Disposition	
11. Disposition : ( ) a. Approved or ( ) b. Rejected	
12. Summary of the disposition :	
13. Signature for Close Out :	

Appendix C MOIP Change Notice (IPCN)

IPCN INSTRUCTIONS:

(This IPCN will be prepared by the ADEOS-II Project.)

1. IPCN Number

2. Date Issued
   (The date of initiation of the IPCN.)

3. Affected Implementation Plan
   (The title and version of the MOIP to be changed.)

4. Number of Related IPCP
   (The number of the IPCP caused this IPCN.)

5. Pages Affected
   (The pages to be substituted by this IPCN.)

6. Signature
   (Approval by the ADEOS-II Ground Segment Project Manager or his designee.)

IPCN Form

ADEOS-II MOIP Change Notice (IPCN)	1. IPCN No. :
	2. Date Issued :

3. Affected Implementation Plan :

ADEOS-II Mission Operations Implementation Plan, Version _____.

4. No. of Related IPCP :

5. Pages Affected :

Please substituted the following Pages.

Section No.	Page to be deleted	Page to be inserted

6. Signature :

Appendix D Nonconformance Reporting and Processing System

The reporting and processing procedure for nonconformance related to ADEOS-II sensors in orbit is specified in the attached document, "Nonconformance Reporting and Processing System for ADEOS-II Sensor in Orbit (TBD)".

Appendix E Provision on ADEOS-II GLI 1km Data Processing Software to be Delivered to NOAA

1. Purpose and Utilization

The purpose of this agreement is to clarify the respective agency's roles and responsibilities when NASDA provides ADEOS-II GLI data Processing Program Software, its related documents and data to NOAA.

NASDA and NOAA recognize that provided software shall be installed at NOAA NESDIS and used to generate Level 1A and 1B data from Level 0 data. The Level 1A and 1B data shall be processed further either centrally at NESDIS or regionally at NOAA's branches, for the purpose of ~~the~~ US coastal ocean color monitoring.

Providing ADEOS-II GLI data Processing Program Software, its related documents and data including source code (hereinafter referred to as "Software") to NOAA is based on ARTICLE II, 1g of the MOU between NASDA and NASA for cooperation in the ADEOS-II program.

2. Deliverable Items

NASDA shall provide the Software for GLI Level 0 to Level 1A and 1B processing which especially corresponds to correction processing algorithms.

Deliverable items are shown in table-1.

Table-1

ITEM NAME	TIME TO BE DELIVERED	REMARK	PLACE
Pre-processing Component	May/99'	source code, 8 mm tape	NOAA/ NESDIS
Level 1A Processing Component	May/99'	source code, 8 mm tape	NOAA/ NESDIS
Level 1B Processing Component	May/99'	source code, 8 mm tape	NOAA/ NESDIS
ADEOS-II GLI Data Product Specification (Product Format)	Dec. /'98 (Draft)	document	NOAA/ NESDIS
ADEOS-II GLI Data Product Specification (Algorithm)	Jan. /'99 (Draft)	document	NOAA/ NESDIS
Software Description	Jan. /'99 (Draft)	document	NOAA/ NESDIS
Software Operation Manual	Jan. /'99 (Draft)	document	NOAA/ NESDIS
Software Testing Procedure	Jan. /'99 (Draft)	document	NOAA/ NESDIS
Calibration tuning parameter data table (Initial version)	May/99'~~TBD~~	electric file, 8mm tape ~~(TBD)~~	NOAA/ NESDIS
Ditto (periodic)	When updated ~~TBD~~	electric file, 8mm tape ~~(TBD)~~	NOAA/ NESDIS
GLI 1km level 0 test data ~~(TBD)~~	May/99'~~TBD~~	For function check of processing system at NOAA, 8mm tape ~~(TBD)~~	NOAA/ NESDIS
NASDA's Level 1A and 1B data, specific area ~~(TBD)~~	May/99'~~TBD~~	For data equality check, 8 mm tape ~~(TBD)~~	NOAA/ NESDIS

3. Roles and Responsibilities

NASDA shall carry out the following responsibilities at no charge to NOAA:

(1) Provide the deliverables shown in the table-1;
(2) Provide new version when NASDA updating the delivered Software; and
(3) Confirm the evaluation report provided by NOAA in terms of the algorithm provider.

NOAA shall carry out the following responsibilities and roles at no charge to NASDA:

(1) Observe the terms and conditions provided in section 4, and NOAA's contractor also shall observe the same terms and conditions;
(2) Send back to NASDA a Reception Confirmation Sheet (refer to Attachment A) when receiving deliverables;
(3) Evaluate equality between both agencies' products and report it NASDA with NOAA's comments.

4. Terms and Conditions

NOAA acknowledges and recognizes that NASDA retains the ownership of copyright on the Software, and the Software shall be protected as property of NASDA, and that these are marked technical information and goods transferred under ARTICLE X 2.b of the MOU.

The delivered Software shall be used only for the utilization purpose prescribed in Section 1.

The delivered Software shall not be reproduced by NOAA except for back-up purpose, and shall not be disclosed to or used by persons of entities other than NOAA, its contractors or subcontractors and for any other purposes, without prior written permission of NASDA.

NOAA agrees to adopt operating procedures and physical security measures designed to protect the GLI software package from disclosure to unauthorized third parties.

In case that NOAA makes a contract with its contractor to develop the GLI data processing system by using the Software, NOAA shall assure that NOAA's contractor or subcontractor shall not leave any copy of the Software in their companies.

The delivered Software shall not be modified by NOAA without prior written permission of NASDA, except for modification necessary for making a program work which is not capable of being used in a particular computer system, capable of being used therein, or making a program work ~~capable of being used~~ more effectively in a computer system.

Attachment A

To: NASDA

RECEIPT CONFIRMATION SHEET

NOAA has just verified that the following items have been delivered to NOAA.

ITEM NAME	Q'TY

REMARK

NOAA/NESDIS

By:

Date:

Appendix F Provision of Two ADEOS-II Telemetry Packet Processors to NASDA by NOAA

~~TBD~~

1. Purpose and Utilization

The purpose of this agreement is to clarify the respective agency roles and responsibilities for the ADEOS-II Telemetry Packet Processors provided by~~when~~ NOAA (the U.S. Government) ~~provides an ADEOS-II telemetry processing system~~ to NASDA (Japanese Government).

NOAA, NASA, and NASDA recognize that the provided packet processors shall be installed at NASDA's Earth Observation Center (EOC), located in Hatoyama, Japan. This system shall be used to process ADEOS-II telemetry in near real-time to provide NOAA SeaWinds and DCS Level 0 data sets and Level 1 GLI data sets to meet NOAA's data latency requirements.

The delivery of~~Providing~~ the ADEOS-II Packet Processors, related documents, and maintenance are based on Article IX 2~~II, 1e~~ of the Memorandum of Understanding between NOAA, NASA, and NASDA for cooperation in the ADEOS-II program.

2. Deliverable Items

NOAA and NASA shall provide the Packet Processing equipment specified in "The Specification of Packet Processing Equipment for the ADEOS-II Program of NASDA EOC". The detailed items are shown in the following table (Table 1).

TABLE 1

ITEM NAME	DELIVERY DATE	REMARKS	SITE
TSI-CGS75 (2 each)	Nov./'98	CCSDS Gateway System - 75Mbps	NEC - Tokyo
TSI-CGS75-SP (2)	ditto	CCSDS Service Processor Upgrade	NEC - Tokyo
TSI-ATMS (2)	ditto	ATM/Sonnet Network I/F	NEC - Tokyo
TSI-RDFU (2)	ditto	Reverse Data Processing Unit	NEC - Tokyo
TSI-VIPWS (3~~/TBD~~)	ditto	TSI VipStation	NEC - Tokyo
TSI-SVGA17 (2)	ditto	17in Monitor with Video Card	NEC - Tokyo
TSI-SVGA20 (2)	ditto	20in Monitor Upgrade (from 17in)	NEC - Tokyo
TSI-CGS75-INST (2)	ditto	CGS75 System Installation	NEC - Tokyo
TSI-ENCL72 (1)	ditto	72in High Rack Enclosure	NEC - Tokyo
TSI-CSS (2)	ditto	TSI Customer Support Service	NEC - Tokyo
TSI-GMS-C1 (2)	ditto	GMS Core Single System License	NEC - Tokyo
TSI-FMS-A1 (2)	ditto	GMS Automation Single System License	NEC - Tokyo
TSI-SG (2)	ditto	Gateway Management S/W - SIM/Data Generation	NEC - Tokyo
~~Monthly~~ Maintenance	ditto	System Maintenance	NEC - Tokyo
Annual Software Subscription Service (2)	ditto	Software Subscription	NEC - Tokyo

3. Roles and Responsibilities

NASA will be the coordinating agency for the transfer of this equipment.

3.1 Procurement

(1) NASA ~~and NOAA~~ to provide the two (2) Packet Processors as shown in Table 1 to NASDA;

(2) NASA ~~and NOAA~~ to provide updates, as received, from TSI, Inc. (the manufacturer) to NASDA;
(3) NASA ~~and NOAA~~ to perform the Factory Acceptance Test (FAT) at TSI's factory in Columbia, Maryland;
(4) NASA ~~and NOAA~~ to provide the results of the FAT to NASDA.

3.2 Transportation

(1) NASA and NOAA to transport two (2) Packet Processors to NEC's factory in Kanagawa Prefecture in Japan.

3.3 Installation at NEC's Factory

(1) NASA ~~and NOAA~~ to deliver and set-up two (2) Packet Processors at NEC's factory;
(2) NASA ~~and NOAA~~ to perform the Post-Shipment Acceptance Test (PSAT) at NEC's factory; (The PAST will be a subset of the FAT.)
(3) NASA ~~and NOAA~~ to provide the result of the PSAT to NASDA;
(4) NASDA to confirm the test result;
(5) NASDA to support the installation performed by NASA and NOAA;
(6) NASDA to perform the interface test after the PSAT;
(7) NASDA to provide the results of the interface test to NASA and NOAA;
(8) NASDA to provide a Receipt Confirmation Sheet (refer to Attachment A) when receiving deliverables in good status to NASA and NOAA with the signature of NASDA's ground segment manager.

3.4 Integration Test

(1) NASDA to perform "Recording Subsystem Integration Test" at NEC's factory to confirm all functions required for Level 0 processing.

3.5 Installation at EOC

(1) NASDA to transport two (2) Packet Processors to EOC;
(2) NASDA to install two (2) Packet Processors at EOC.

3.6 Operation

(1) NASDA to operate two (2) packet Processors during the ADEOS-II mission;
(2) NASDA to provide an operational (24 hour/7 day) environment, including grounding, ESD (electro-static discharge), un-interruptable power supply, and air conditioning (including humidity control) to insure proper functioning of the two (2) Packet Processors and adequate protection from electrical damage;
(3) NASDA to report all losses, damage, or destruction of U.S. Government property to NASA as soon as possible after detection.

3.7 Maintenance

3.7.1 NASDA's Responsibility

NASDA to perform the following actions for maintenance of NOAA Packet Processors. NASDA will prepare one (1) set of spare parts for maintenance of all Packet Processors, including NASDA's Packet Processor.

(1) Perform diagnosis of non-functioning equipment and exchange it with spare parts at EOC;
(2) Ship the failed equipment to TSI, Inc. through Cornes, Ltd. (including the transport costs to TSI);
(3) Re-install the repaired equipment and remove and restock the spare parts;
(4) Perform installation work for system software updates by TSI for bug fixes and minor revisions.

3.7.2 NASA/NOAA's Responsibility

NASA and NOAA to contract with TSI, Inc. to provide the following maintenance for NOAA's two (2) Packet processors.

(1) Repair non-functioning equipment returned from EOC;
(2) Exchange failed modules, when confirmed by TSI;
(3) Ship repaired equipment to NEC through Cornes, Ltd. (including transport costs to NEC);
(4) Provide NASDA access to TSI via phone, FAX, and e-mail during business hours at TSI;
(5) Perform remote diagnostics (it is necessary to schedule time beforehand with EOC)
(6) Provide system software bug fixes (patches);
(7) Provide system software updates (e.g. a minor revision from version 3.0 to 3.1).

3.8 Other

(1) NASDA to observe the terms and conditions provided in Section 4.

4. Terms and Conditions

NASDA acknowledges and recognizes that NOAA (the U.S. Government) retains ownership of the packet processing equipment, and this equipment shall be protected as property of NOAA, and that this equipment is marked "technical information and goods transferred under Article X, 2 of the MOU".

The delivered packet processor shall be used only for the purposes described in Section 1.

NASDA agrees to adopt operating procedures and physical security measures designed to protect the Packet Processor from damage or disclosure of the technology to unauthorized third parties.

The delivered hardware shall not be modified in any manner without written prior permission of NOAA, except for modification necessary to interface with other EOC equipment or network interfaces.

All U.S. Government provided equipment and spares shall be returned to NOAA at the end of the ADEOS-II mission at the expense of NASDA.

Attachment A

Receipt Confirmation Sheet

To: Mr. Gene Legg

NOAA/NESDIS/OSDPD

Code E/SP1
Room 3065
Federal Building 4
Washington, DC 20233

Mr. David Lassiter
NASA/Goddard Space Fight Center/Wallops Flight Facility
Code 822
Building E108, Room 204
Wallops Island, VA 23337-5099

NASDA has verified that the following items have been delivered to NASDA in good working order.

Item Name:

Quantity:

Remarks:

NASDA/EOC

By: Yoshio Ishido
Senior Engineer, ADEOS-II Ground System Manager
Earth Observation Systems Engineering Department, NASDA
World Trade Center Building 27F
2-4-1 Hamamatsu-cho
Minato-ku, Tokyo, Japan

Date:

Appendix G HDDR Compatibility (same as Appendix G of the ADEOS MOIP)

NASDA and NASA recognize that the equipment placed by NASDA/EOC corresponds to "Necessary Equipment" defined at ARTICLE XI of the MOU between NASDA and NASA for cooperation in the ADEOS program.

The equipment consists of the raw mission data recording equipment for ADEOS and its spare parts. NASA will supply the raw mission data to NASDA using the equipment placed by NASDA and using the completely compatible equipment prepared by NASA in case of master data damage.

The equipment to be placed consists of the following:

(1) D-1 cassette type HDDR (DIR-1000M, DFC-1800N) 6 sets
(including Accessories shown in Table-1 of Attachment G-1.)

(2) Spare parts (shown in Table-2 of Attachment G-2.)

Above equipment (1) is available for a four-year term from its delivery. Spare parts (2) is available for a three-year term from its delivery.
After the above mentioned term, both agencies will discuss the treatment of the HDDR.

NASA shall exercise due care in operating and maintaining such items described above. NASA shall not use such items for any purpose other than that intended in the MOU/IP.

NASDA will carry out the following responsibilities at no charge to NASA:

(1) Provide a four-year placing of the NASDA property listed above to ASF and WFF for its use in cooperation with the ADEOS program;

(2) Transport the equipment to WFF, and deliver it to NASA after NASDA inspecting its performance with NASA's support at the place;

(3) Perform a periodical maintenance by the NASDA's designated contractor at ASF and WFF with NASA's support;

(4) Transport the equipment back to NASDA after finishing the ADEOS program and to exchange the return confirmation sheet with NASA;

(5) Provide NASA with D-1 cassette tapes to be used in order to record ADEOS raw mission data with the placed equipment.

NASA will carry out the following responsibilities at no charge to NASDA:

(1) Exchange the receipt confirmation sheet, shown on Attachment G-3, with NASDA when the equipment being delivered to NASA;

(2) Transport the equipment from WFF to ASF, for each placing 3 sets of equipment there, and Integrate the NASDA's equipment into the NASA system;

(3) Operate the equipment within the limits specified for power and environment;

(4) Perform daily preventative maintenance based on the manual to be delivered;

(5) Perform total function test as a part of pre launch compatibility test defined in this IP at NASA's designated place or ground stations;

(6) Make no modifications to the NASDA property including parts replacement to restore operability unless approved in writing by NASDA;

(7) Report all losses, damage, or destruction of NASDA property to NASDA as soon as possible from the detection. The disposition for the equipment should be determined after NASDA and NASA discuss the cause and take into account the provisions of the MOU, and

Hold the failure parts with identification tag until delivering to NASDA;

The spare parts asterisked in Table-2 of Attachment G-2 can be used in case of NASDA HDDR's malfunction by NASA's staff and/or NASA designated contractor's staff who are trained by NASDA designated contractor.

(8) Report annually inventory information to NASDA/EOC containing the description, identification number, location, current use and condition of each item on behalf of NASDA EOC based on the format shown on attachment G-4;

(9) Prepare the compatible equipment with the equipment placed by NASDA to record the raw mission data for backup in parallel;

(10) Prepare the D-1 cassette tapes to be used in order to record the raw mission data with the equipment prepared by NASA. Provide NASDA with the identical tape recorded by NASA's equipment in case of loss of data from the NASDA Sony recorders or damage during tape transport to EOC.

In the event NASA elects to terminate this HDDR placing prior to its expiration, the NASDA property shall be returned immediately, coordinating the shipping plan.

Attachment G-1

Table -1

NAME		QUANTITY	REMARK
ACCESSORY for DIR-1000M	Rack mount L-angle	6	
	Power cable	6	
ACCESSORY for DFC-1800N	Rack mount kits	6	
	Digital cable	12	
	9 pin remote cable	6	
	15 pin AUX cable	6	
	Power cable	6	
Others	Test tape	6	
	Examination data sheet	6	
	User's manual	6	
	Operation manual	6	
	Protocol manual	6	

Attachment G-2

Table-2 (for each station)

ITEM NAME	PART NO	QTY	DESCRIPTION	REMARK
DRUM KIT (URU-D1000M)	A-6052-146-X	1	DRUM ASSY (DDR-52-R), INNER	
	X-3166-811-X	1	PINCH ROLLER ASSY	
	7-662-001-41	1	GREASE, MOLYTON 30G (No.1)	
BOARD KIT (URU-B1000E)	A-6017-157-X	1	MOUNTED CIRCUIT BOARD, CP-143	*
	A-6021-013-X	1	MOUNTED CIRCUIT BOARD, IF-270	*
	A-6023-063-X	1	MOUNTED CIRCUIT BOARD, MD-69	*
	A-6038-043-X	1	POWER (2) ASSY	*
	A-6038-056-X	1	POWER ASSY	*
	1-532-779-11	10	FUSE, 2.0A 125V	*
	1-532-783-21	10	FUSE, 5.0A 125V	*
	1-576-071-11	10	FUSE, 6.3A 125V	*
BOARD KIT (URU-B1000M)	A-6011-188-X	1	MOUNTED CIRCUIT BOARD, EO-38	
	A-6049-084-X	1	REC ASSY	
	A-6013-130-X	1	MOUNTED CIRCUIT BOARD, AE-11A	
	A-6015-125-X	1	MOUNTED CIRCUIT BOARD, SSP-4A	
	A-6019-057-X	1	MOUNTED CIRCUIT BOARD, PIF-5	
	A-6019-058-X	1	MOUNTED CIRCUIT BOARD, PR-136	
TRANSPORT KIT (URU-T1000E)	A-8267-345-X	1	CASSETTE COMPARTMENT ASSY	
	A-6029-064-X	1	CD BLOCK ASSY	
	A-6029-065-X	1	PIN ASSY, STANDARD	
	A-6029-066-X	2	PIN ASSY, UB	
	A-6029-086-X	1	MOTOR ASSY, LOADING	
	A-6029-090-X	2	SENSOR (C) ASSY	
	A-6029-095-X	1	BRAKE (S) ASSY	
	A-6029-098-X	1	BRAKE (T) ASSY	
	A-6029-114-X	1	MOTOR ASSY, SHIFT	
	A-6029-115-X	1	M STOPPER ASSY	
	A-6029-155-X	2	SENSOR ASSY, TAPE	
	A-6029-159-X	1	SHIELD ASSY, EH	
	X-3166-811-X	1	PINCH ROLLER ASSY	
	X-3166-299-X	1	GUIDE ASSY	
	X-3166-812-X	2	GUIDE (X) ASSY, ROLLER	
	1-541-901-11	1	MOTOR, DC FAN	
	1-541-902-11	1	MOTOR, FAN	
	7-662-001-41	1	GREASE, MOLYTON 30G (No.1)	
	8-719-915-46	10	PHOTO INTERRUPTER GP-1S05	

note) " X", the last character of PART NO, means a version number of each parts.

Attachment G-3

(I) RECEIPT CONFIRMATION SHEET

NASA has just verified that the following items have been delivered to NASA by NASDA at the place of GSFC/WFF with the condition described below.

(I-A) ITEM FOR DELIVERY:

CATEGORY	ITEM NAME		TYPE	Q'TY	REMARK
A	High Density Digital Recorder	Digital data recorder	DIR-1000M	6	
		Variable rate buffer	DFC-1800N	6	
A-A	ACCESSORY for DIR-1000M	Rack mount L-angle		6	
		Power cable		6	
	ACCESSORY for DFC-1800N	Rack mount kits		6	
		Digital cable		12	
		9 pin remote cable		6	
		15 pin AUX cable		6	
		Power cable		6	
A-B	Others	Test tape		6	
		Examination data sheet		6	
		User's manual		6	
		Operation manual		6	
		Protocol manual		6	

(I-B) CONDITION FOR DELIVERY:

1. Item's Quality (refer the test result sheet attached) and Quantity
   External appearance : good
   Performance and function : good
   Quantity : OK as shown on the previous page

For NASDA/EOC	For NASA GSFC/WFF
By:	By:
Date:	Date:

(II) RECEIPT CONFIRMATION SHEET FOR SPARE PARTS

NASA has just verified that the following items have been delivered to NASA by NASDA with the condition described below.

(II-A) ITEM FOR DELIVERY:

CATEGORY	ITEM NAME	PART No.	Q'TY	DESCRIPTION
B	DRUM KIT (URU-D1000M)	A-6052-146-X	1	DRUM ASSY (DDR-52-R), INNER
		X-3166-811-X	1	PINCH ROLLER ASSY
		7-662-001-41	1	GREASE, MOLYTON 30G (No.1)
	BOARD KIT (URU-B1000E)	A-6017-157-X	1	MOUNTED CIRCUIT BOARD, CP-143
		A-6021-013-X	1	MOUNTED CIRCUIT BOARD, IF-270
		A-6023-063-X	1	MOUNTED CIRCUIT BOARD, MD-69
		A-6038-043-X	1	POWER (2) ASSY
		A-6038-056-X	1	POWER ASSY
		1-532-779-11	10	FUSE, 2.0A 125V
		1-532-783-21	10	FUSE, 5.0A 125V
		1-576-071-11	10	FUSE, 6.3A 125V
	BOARD KIT (URU-B1000M)	A-6011-188-X	1	MOUNTED CIRCUIT BOARD, EO-38
		A-6049-084-X	1	REC ASSY
		A-6013-130-X	1	MOUNTED CIRCUIT BOARD, AE-11A
		A-6015-125-X	1	MOUNTED CIRCUIT BOARD, SSP-4A
		A-6019-057-X	1	MOUNTED CIRCUIT BOARD, PIF-5
		A-6019-058-X	1	MOUNTED CIRCUIT BOARD, PR-136
	TRANSPORT KIT (URU-T1000E)	A-8267-345-X	1	CASSETTE COMPARTMENT ASSY
		A-6029-064-X	1	CD BLOCK ASSY
		A-6029-065-X	1	PIN ASSY, STANDARD
		A-6029-066-X	2	PIN ASSY, UB
		A-6029-086-X	1	MOTOR ASSY, LOADING
		A-6029-090-X	2	SENSOR (C) ASSY
		A-6029-095-X	1	BRAKE (S) ASSY
		A-6029-098-X	1	BRAKE (T) ASSY
		A-6029-114-X	1	MOTOR ASSY, SHIFT
		A-6029-115-X	1	M STOPPER ASSY
		A-6029-155-X	2	SENSOR ASSY, TAPE
		A-6029-159-X	1	SHIELD ASSY, EH
		X-3166-811-X	1	PINCH ROLLER ASSY
		X-3166-299-X	1	GUIDE ASSY
		X-3166-812-X	2	GUIDE (X) ASSY, ROLLER
		1-541-901-11	1	MOTOR, DC FAN
		1-541-902-11	1	MOTOR, FAN
		7-662-001-41	1	GREASE, MOLYTON 30G (No.1)
		8-719-915-46	10	PHOTO INTERRUPTER GP-1S05

note) " X", the last character of PART NO, means a version number of each parts.

(II-B) CONDITION FOR DELIVERY:

1. Item's Quality and Quantity
   External appearance : good
   Quantity : OK

2. Location : [ ]*
   * When delivering, the blank will be filled, describing ASF or WFF.

For NASDA/EOC For [ ]*
By: By:
Date: Date:

Attachment G-4

ANNUAL INVENTORY REPORT
(from May, 1995 to April, 1996)

NASA informs NASDA of the present status of the equipment having been delivered from NASDA based on the Implementation Plan defined in the MOU concerning the ADEOS program.

The details are shown in the attached sheet.

_____ For NASDA/HQ

_____ Date:

CATEGORY A : D-1 CASSETTE TYPE HDDR
B : SPARE PARTS
C : TAPE

WFF/ASF Station

< example >

CATEGORY	ITEM NAME	TYPE	QTY		LOCATION	CURRENT condition	REMARK
			on use	with hold			
A	Digital data recorder	DIR-1000M	3	0	ASF	on use in good condition	
	Variable rate buffer	DFC-1800N	3	0	ASF		
A-A	ACCESSORY for DIR-1000M				ASF	on use in good condition	
	Rack mount L-angle		3	0			
	Power cable		3	0			
	ACCESSORY for DIR-1800N				ASF		
	Mount kits		3	0			
	Digital data cable		6	0			
	9 pin remote cable		3	0			
	15 pin AUX cable		3	0			
	Power cable		3	0			
A-B	Test tape		3	0	ASF	D1-M tape	
	Examination data sheet		3	0			
	User's manual						
	Operation manual		3	0			
	Protocol manual		3	0			
			3	0			

CATEGORY	ITEM NAME	P/N	Q'TY			LOCATION	CURRENT condition
			on use	on stock	with hold		
B	DRUM KIT	A-6052-146-X X-3166-164-X 7-662-001-41	1	0 1 1	1 *1)	ASF	*1) Replaced the failure part with the spare Aug. 11 ,1998
	BOARD KIT	A-6017-157-X A-6021-013-X A-6023-063-X A-6038-043-X A-6038-056-X 1-532-779-11 1-532-783-21 1-576-071-11	1	0 1 1 1 1 10 10 10	1 *2)	ASF	*2) Replaced the old part with the spare durir the periodical maintenance
	BOARD KIT	A-6011-188-X A-6049-084-X A-6013-130-X A-6015-125-X A-6019-057-X A-6019-058-X		1 1 1 1 1 1		ASF	
	TRANSPORT KIT	A-6028-015-X A-6029-064-X A-6029-065-X A-6029-066-X A-6029-086-X A-6029-090-X A-6029-095-X A-6029-098-X A-6029-114-X A-6029-115-X A-6029-155-X A-6029-159-X X-3166-164-X X-3166-299-X X-3166-812-X 1-541-901-11 1-541-902-11 7-662-001-41 8-719-915-46		1 1 1 2 1 2 1 1 1 1 2 1 1 1 2 1 1 1 10		ASF	

CATEGORY	ITEM NAME	P / N	Q'TY			LOCATION	CURRENT condition
			on use	on stock	with hold		
C	D1-M CASSETTE TAPE	TBD				ASF	